COPY

AD-A221 318

PRIME – POWER REQUIREMENTS FOR INSTALLATIONS AND MILITARY ENCAMPMENTS VERSION 2.1 END-USER MANUAL

Report AR805R2

October 1989

R. W. Salthouse
D. M. Brown
J. Hawkins

DTIC
S D
MAY 0 9 1990
E

Prepared pursuant to Department of Defense Contract MDA903-85-C-0139. The views expressed here are those of the Logistics Management Institute at the time of issue but not necessarily those of the Department of Defense. Permission to quote or reproduce any part must – except for Government purposes – be obtained from the Logistics Management Institute.

LOGISTICS MANAGEMENT INSTITUTE
6400 Goldsboro Road
Bethesda, Maryland 20817-5886

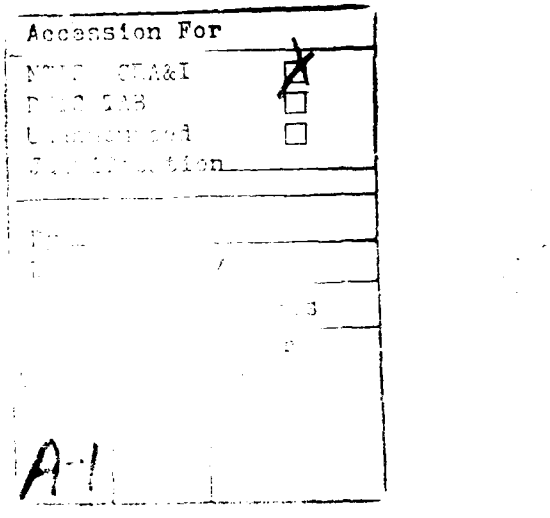
DIST... A
Appr... release;
D...

90 05 09 140

PREFACE

This end-user manual conforms to DoD Standard 7935A: *DoD Automated Information Systems Documentation Standards.* First-time users should start by reading Section 3, which includes the installation instructions (Section 3.1.3). Experienced users can go directly to Section 4 for instructions on calculating overseas prime power requirements or Section 5 for calculating domestic requirements. Hardware requirements are provided in Section 2.2.1.

IBM PC and IBM PC AT are registered trademarks of International Business Machines. PC-DOS and MS-DOS are registered trademarks of Microsoft. dBase III Plus and dBase IV are trademarks of Ashton-Tate. All other product names mentioned in this end-user manual are the trademarks of their respective companies.



Summary

PRIME – POWER REQUIREMENTS FOR INSTALLATIONS AND MILITARY ENCAMPMENTS VERSION 2.1 END-USER MANUAL

The Army uses prime power – large, mobile generators – in its rear areas to bridge the gap between commercial power and tactical generators. When supplying concentrations of Army units, prime power is less vulnerable than commercial power yet demands less fuel and maintenance than tactical generators.

The Engineering and Housing Support Center (EHSC) procures, operates, and maintains the Army's prime power requirements. Power Requirements for Installations and Military Encampments (PRIME) is the model which EHSC uses to calculate prime power requirements for selected Army units and facilities in specific wartime scenarios.

To calculate the Army's total prime power requirement, EHSC is sending PRIME to all major commands since they are best able to enter the necessary wartime scenario data. With PRIME, the commands can enter data either manually, by choosing from a computer-generated list of Army units, or automatically, by downloading selected data from the Worldwide Military Command/Control System via an intermediate dBase-format file.

This end-user manual is intended primarily for computer operators and Army planners who need to calculate unit and facility power requirements. Since the manual also describes the PRIME model's methodologies, it should be useful to those who want to know what the model does and how it works.

CONTENTS

		Page
Preface		iii
Summary		v
Tables		xi
Figures		xi
Section 1.	General	1- 1
1.1	Purpose of the End-User Manual	1- 1
1.2	Purpose of the System	1- 1
1.3	References	1- 2
1.3.1	Project Request	1- 2
1.3.2	Hardware Documentation	1- 2
1.3.3	Software Documentation	1- 2
1.3.4	Previous Publications	1- 3
1.4	Terms and Abbreviations	1- 3
1.5	Security	1- 3
Section 2.	System Summary	2- 1
2.1	Overview	2- 1
2.1.1	Application Summary	2- 1
2.1.2	Performance	2- 8
2.1.3	Controls	2-10
2.2	System Environment	2-10
2.2.1	Hardware Required	2-10
2.2.2	Software Required	2-10
2.3	Contingencies and Alternate Modes of Operation	2-10
2.3.1	Computer System Failure	2-10
2.4	Assistance and Problem Reporting	2-11
Section 3.	Access to the System	3- 1
3.1	First-Time Use of the System	3- 1
3.1.1	Equipment Familiarization	3- 1
3.1.2	Access Control	3- 2
3.1.3	Installation and Setup	3- 3
3.2	Initiating a Session	3- 4

CONTENTS (Continued)

		Page
3.2.1	Getting Organized	3- 4
3.2.2	Starting the Model	3- 6
3.3	Stopping or Suspending Work	3- 7
Section 4.	Operating the OCONUS Modules	4- 1
4.1	Capabilities	4- 1
4.2	Conventions	4- 1
4.3	Processing Procedures	4- 4
4.3.1	Initial Dialog	4- 5
4.3.2	Create a New OCONUS Data Disk	4- 5
4.3.3	Create/Append/Edit OCONUS Base Scenario	4- 7
4.3.4	Transfer Data From Existing dBase File	4-18
4.3.5	Run OCONUS Base Scenario	4-21
4.3.6	Print Output	4-23
4.4	Related Processing	4-23
4.5	Data Backup	4-24
4.5.1	General	4-24
4.5.2	Procedure	4-24
4.6	Recovery From Errors and Malfunctions	4-24
4.7	Messages	4-27
Section 5.	Operating the CONUS Modules	5- 1
5.1	Capabilities	5- 1
5.2	Conventions	5- 2
5.3	Processing Procedures	5- 4
5.3.1	Initial Dialog	5- 4
5.3.2	Create New CONUS Data Disk	5- 5
5.3.3	Input/Edit/Run CONUS Mobilization Scenario	5- 6
5.3.4	Print Output	5-10
5.4	Related Processing	5-11
5.5	Data Backup	5-11
5.5.1	General	5-11

CONTENTS (Continued)

		Page
5.5.2	Procedure	5-12
5.6	Recovery from Errors and Malfunctions	5-12
5.7	Messages	5-14
Appendix A.	Acronyms	A-1 – A-2
Appendix B.	PRIME Methodology: Sample Calculations	B-1 – B-5
Appendix C.	Input/Output Data File Formats	C-1 – C-5

TABLES

		Page
3- 1.	PRIME Files	3- 4
4- 1.	SRC Structure	4-12
4- 2.	Input File Format (dBase)	4-19

FIGURES

		Page
2- 1.	Logical Organization of the OCONUS PRIME Model Files	2- 3
2- 2.	Logical Organization of the CONUS PRIME Model Files	2- 4
2- 3.	Participating Organizations and Systems	2- 7
3- 1.	Primary Parts of a Generic Microcomputer	3- 1
4- 1.	OCONUS Main Menu	4- 2
4- 2.	Scenario Description	4- 9
4- 3.	Base Description	4-10
4- 4.	Unit Pick List	4-13
4- 5.	Editing the Unit Quantity	4-14
4- 6.	Selecting Options	4-14
4- 7.	Facility Pick List	4-15
4- 8.	Input File Display	4-17
4- 9.	Edit Menu	4-17
4-10.	Load Distribution Table	4-22
4-11.	Output File Display	4-23
5- 1.	CONUS Main Menu	5- 1
5- 2	Scenario Description	5- 8
5- 3	Installation Data Entry Screen	5- 9
5- 4	Output Summary Screen	5-11

SECTION 1

GENERAL

1.1 PURPOSE OF THE END-USER MANUAL

Per DoD Standard 7935A:

> The objective of the End User Manual for the *Power Requirements for Installations and Military Encampments (PRIME) model* is to provide the end user with the information necessary to use the system effectively, including unique aspects of the operation of *standard IBM PC™ and IBM-compatible personal computer equipment.*

1.2 PURPOSE OF THE SYSTEM

PRIME is a computer model that calculates peak electric power requirements for both permanent and temporary Army installations. PRIME calculates the Army's requirements for prime power generators – mobile generators that produce 500 kilowatts (kw) or more of power. These generators help the Army bridge the sizable gap that exists between commercial electric power and tactical generators. PRIME power generators provide mobility, reliability in war, and economic use of fuel and manpower.

With the power requirement estimates generated by PRIME Army planners can determine how many prime power generators they will need in time of war or other emergencies and for domestic installations during mobilization. PRIME's power estimates are not limited to prime power; however, they can also assist Army planners in developing effective support agreements with host nations overseas, by providing a reliable estimate of commercial power requirements at specific locations.

PRIME has two components: one calculates power requirements for scenarios Outside the Continental United States (OCONUS) and the other calculates mobilization power requirements within the CONUS. The OCONUS component of PRIME estimates power requirements based on the specific electricity-consuming items in the tables of organization and equipment (TO&Es) of each Army unit, plus the lighting requirements of temporary and permanent facilities. The CONUS component of PRIME uses power factors developed from historic data on electricity

consumption in both wartime and peacetime, using the linear regression statistical technique. Both PRIME components estimate peak or maximum load requirements rather than connected load, which is the sum of all equipment connected to a system. Peak load, which is less than connected load, is a more realistic estimate of actual requirements since all items of equipment will rarely operate simultaneously.

PRIME ensures that neither too many nor too few prime power generators are acquired and deployed. The Army previously estimated its prime power requirements by using a general planning factor of 0.7 kw per person. That factor, however, does not take into account the wide variance in power requirements among different units. Field hospitals and heavy maintenance units, for example, generally require more power than tactical combat units. We have found that power requirements in standard Army units range from a low of 0.0 kw per person to as high as 13.2 kw per person.

1.3 REFERENCES

1.3.1 Project Request

The PRIME model was prepared for the Prime Power Directorate (PPD) of the Engineering and Housing Support Center (EHSC) by:

The Logistics Management Institute (LMI)
6400 Goldsboro Road
Bethesda, MD 20817-5886

ıder Task AR805 pursuant to DoD Contract MDA903-85-C-0139.

1.3.2 Hardware Documentation

PRIME runs on IBM PC and IBM-compatible personal computers (PCs). The documentation for those systems is provided at the time of their issue by the Army.

1.3.3 Software Documentation

In order to run PRIME, the user's computer must be running either the PC-DOS™ or MS-DOS™ operating system. Operating system documentation is provided by the Army. We provide the instructions for running PRIME in this end-user manual, including instructions on those aspects of DOS needed to run the model.

A maintenance manual for PRIME is forthcoming. It will contain more technical information on the system's operation than this end-user manual.

1.3.4 Previous Publications

The user requires no other documentation than this manual and the references noted above. However, further information on the mission of prime power and the methodology used in constructing the model are contained in the LMI Report, *Prime Power: Filling the Army's Electric Power Gap.*[1] (The original prototype model was named the Prime Power Requirements Model.)

1.4 TERMS AND ABBREVIATIONS

The acronyms used in this guide are listed in Appendix A.

1.5 SECURITY

The model uses classified data in its calculations. PRIME allows the user to specify the drive to which the output will be written. When entering data from an actual Time Phased Force Deployment List (TPFDL), the data files generated by PRIME will contain classified information and should never be stored on a disk that cannot be removed from the PC and secured. The PC must be cleared for classified operation up to the level of the data to be used. All data disks produced by PRIME and all printed reports must be handled as classified material.

> *WARNING!! All copies of data diskettes or printouts containing classified data must be entered in the classified log.*

To reduce the creation of classified waste and the time spent handling classified PRIME input, users should read this end-user manual before operating PRIME.

PRIME itself contains no classified data, so the program disks can be stored anywhere. The program disks containing the PRIME software should be *write protected.*

---

[1]LMI Report AR805R1. *Prime Power: Filling the Army's Electric Power Gap.* Salthouse, Robert W., Jeffrey Hawkins, Douglas M. Brown, and Carl F. Stout. Jan 1989.

SECTION 2

SYSTEM SUMMARY

2.1 OVERVIEW

2.1.1 Application Summary

In this section, we present a brief overview of PRIME's structure and operations. *For detailed operating instructions, please turn to Sections 3, 4, and 5.*

PRIME uses a sequence of menus and "pick lists" to make data entry and power estimation as simple as possible for the user. You need only the most basic knowledge of IBM PCs or IBM-compatibles to run PRIME. (We explain the few DOS commands necessary in this end-user manual.)

In most cases, you will not need to know the logical organization or the number and names of the files that comprise PRIME. Nevertheless, a list of the files is helpful if only to ensure that everything is available to you before you run the model.

a. System Functions

PRIME is designed for standalone microcomputer processing: that is, for use on PCs with keyboards, processing units, storage devices, display terminals, and printers. Before you enter classified data, have the PC hardware cleared for classified use.

The OCONUS and CONUS components of PRIME reside on three standard 360 kilobyte (Kb) floppy diskettes. The two OCONUS disks contain the following program and data files:

- Program files:
  - PRIME1.EXE : Main menu (and data drive specifier)
  - IN_BASE.EXE : Input/edit OCONUS scenario data
  - IN_FILE.EXE : Import dBase-format data files
  - CALC_BAS.EXE : Calculate OCONUS-scenario peak load

- Data files:
  - UNIT.TXT : Unit name/SRC data for input
  - INST.TXT : Facility name/ID data for input
  - LOAD.DAT : Army unit electric load data
  - I_EMPTY.BAK : Empty input file (dBase format)
  - O_EMPTY.BAK : Empty output file (dBase format).

The single CONUS disk contains the following files:

- Program files:
  - PRIME2.EXE : Main Menu (and data drive specifier)
  - CALC_MOB.EXE : Input/calculate CONUS peak load
- Data files:
  - TRADOC.BAK : TRADOC installation data (dBase format)
  - FORSCOM.BAK : FORSCOM installation data (dBase format).

Figure 2-1 illustrates the logical organization of the files comprising the OCONUS portion of PRIME. Figure 2-2 illustrates the organization of the CONUS portion. You start either the OCONUS or CONUS models by calling a main menu (PRIME1.EXE and PRIME2.EXE, respectively). All of the other program files (those with .EXE file name extensions) are then accessed from that main menu. You should *not* attempt to access those program modules directly.

In addition, as shown in Figure 2-1, PRIME will produce data files in dBase™ format (Version III Plus). If you are familiar with dBase, you can access those files just like any other dBase files to view, sort, or print the scenario data that you have input and the output power requirements you have estimated. We provide the dBase file formats and data codes in Appendix C. PRIME produces data files whose names conform to the following format (the n's correspond to numbers):

- Input/output files:
  - I_nnnnnn.DBF : OCONUS scenario input
  - O_nnnnnn.DBF : OCONUS scenario output
  - X_nnnnnn.TXT : OCONUS exception file (ASCII format)

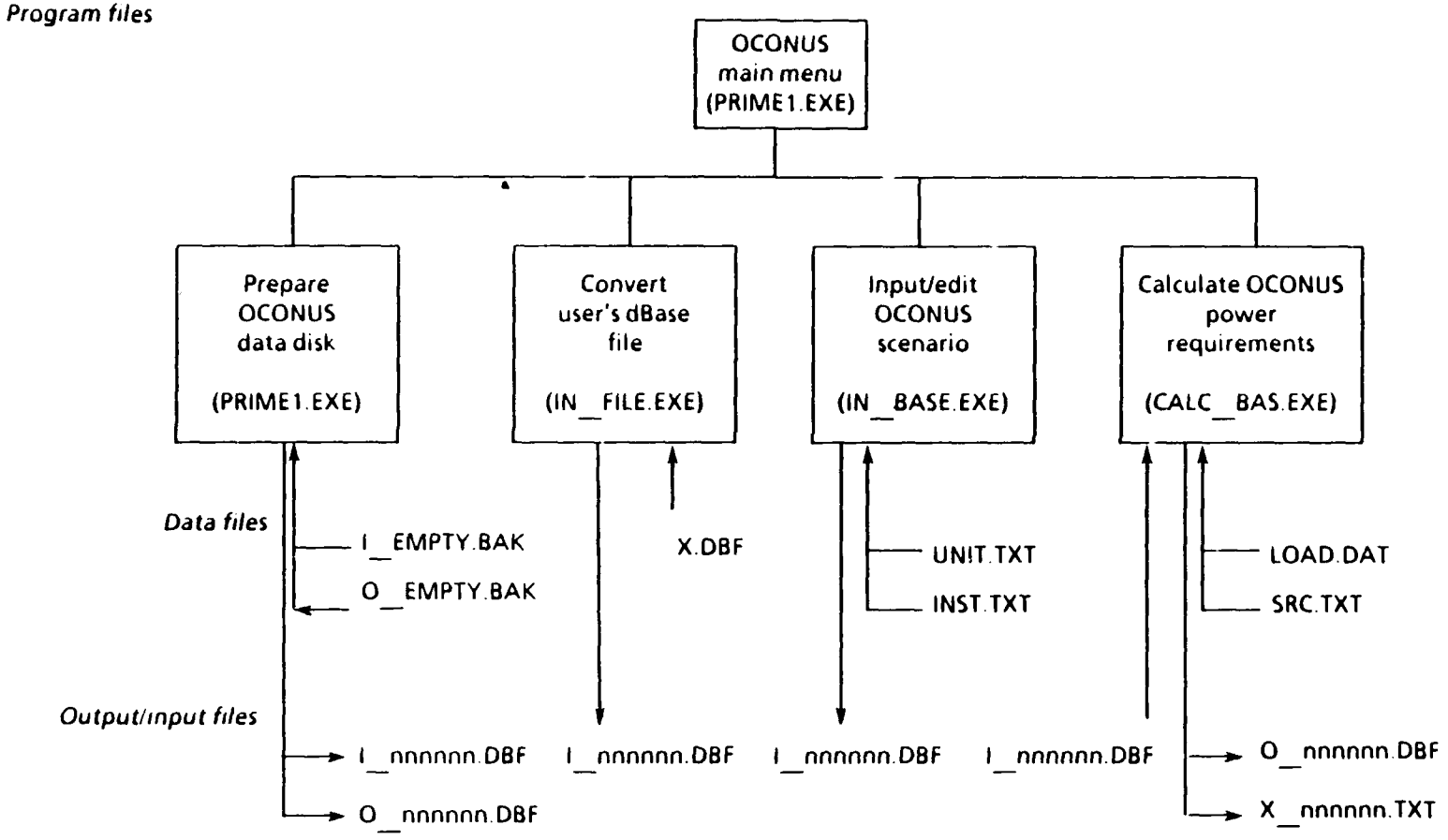


FIG. 2-1. LOGICAL ORGANIZATION OF THE OCONUS PRIME MODEL FILES

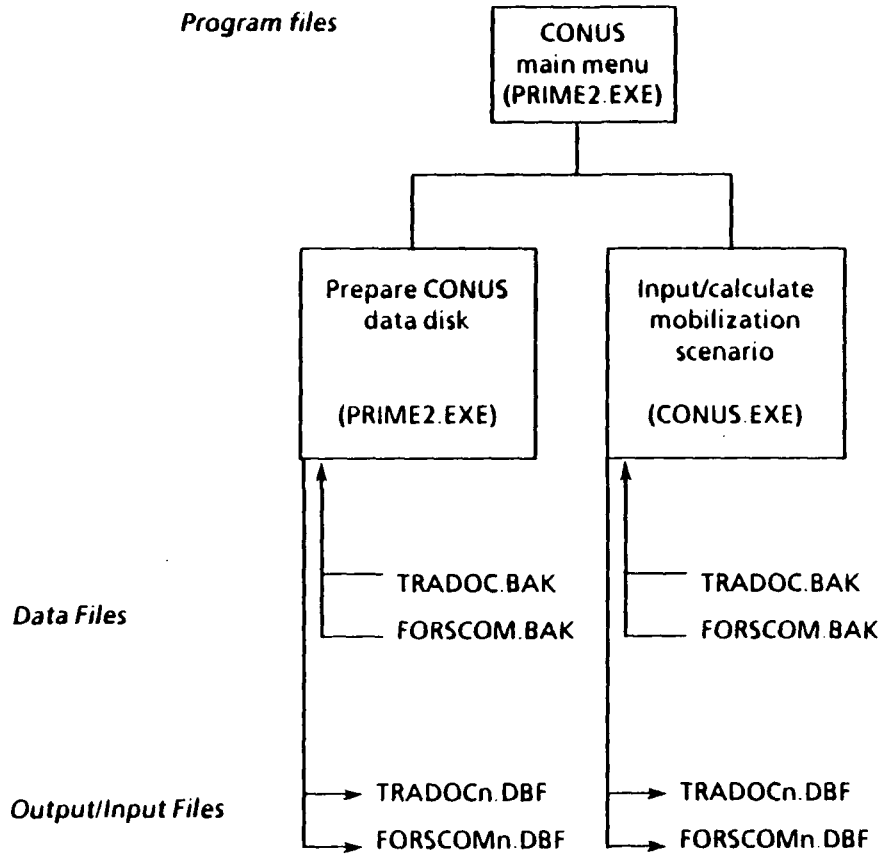


FIG. 2-2. LOGICAL ORGANIZATION OF THE CONUS PRIME MODEL FILES

- TRADOCn.DBF : CONUS scenario input/output
- FORSCOMn. DBF : CONUS scenario input/output.

PRIME can estimate electric power requirements for both OCONUS and CONUS. In both cases, PRIME takes the user through three stages. First, the user must use PRIME to prepare a blank, formatted storage media to receive the data input/output files (use floppy diskettes or other removable storage devices; never store input or output data on a fixed hard disk). Second, the user must input the required data, and third, the user should ask PRIME to calculate power requirements for that specific scenario. The CONUS module of PRIME integrates input and calculation into one routine.[1]

i. Created Databases. The databases that describe OCONUS and CONUS scenarios are created by the user. The user enters information describing the given OCONUS scenario (such as movement frequency, base names, and the composition of the bases by types of unit) and/or mobilization requirements for CONUS installations. Two CONUS files with installation data effective June 1988 are provided on the CONUS program diskette. (These data will be periodically updated by EHSC/PPD.)

WARNING!! The databases created may be CLASSIFIED.

ii. Processing. The OCONUS module of PRIME links the input databases with the program data files to determine how much equipment is present at each base, what the power requirement will be, and whether prime power is appropriate for that base. The model then determines the electrical peak load at each base and presents a summary of the distribution of peak loads for the given scenario. We provide a step-by-step numerical example of the methodology in Appendix B. The model analyzes only one scenario at a time; determination of how many scenarios are to be supported by prime power simultaneously is a policy decision beyond the scope of this manual.

b. Communication Paths and Techniques

PRIME works on standalone PCs with internal communications paths.

[1] Either manually, via the input module, or automatically, via the dBase convert module.

c. Interfaces to Other Systems

PRIME Version 2.1 is a standalone system that does not interface automatically with any other system. However, the OCONUS portion of PRIME can interface indirectly with the Worldwide Military Command/Control System (WWMCCS) by downloading data from WWMCCS into a dBase file and then converting that file into a PRIME input file. Section 4.3.4 provides detailed instructions for transferring WWMCCS data to PRIME via removable disk.

> *WARNING!! WWMCCS data are CLASSIFIED. All removable disks used in the transfer process must be entered in the classified log. WWMCCS data should not be stored, even temporarily, on a fixed hard disk.*[2]

Using the same process, PRIME can also interface with the Planning Resources of Logistics Units Evaluator (PROLOGUE) via an intermediate dBase file. PROLOGUE is a computer system developed by the Army's Logistics Evaluation Agency (LEA) to analyze the logistics requirements of deployed units. An advantage of using PROLOGUE data as input for PRIME is that LEA has already downloaded unit data for select Operation Plans (OPLANs) from WWMCCS and has edited these data for completeness and accuracy.

d. Participating Organizations

Figure 2-3 shows the relationships of PRIME with the other organizations that interact with the model. The PRIME operations and update cycle requires the participation of various organizations. The end user is not required to update the model or its data files; PPD/EHSC performs that function.

i. ***PPD/EHSC.*** PPD/EHSC is the model sponsor and reviews the model's outputs. In coordination with the major commands (MACOMs) PPD takes the necessary steps to procure PRIME power. PPD determines where power units should be assigned and how to staff them. PPD also is responsible for coordinating with all other activities to ensure database and scenario updates reach PRIME users and is responsible for periodically updating and otherwise maintaining the model.

---

[2]The DOS commands *ERASE* and *DELETE* only change a file's directory entry; they do not erase the actual data on the disk. Such files can be restored relatively easily.

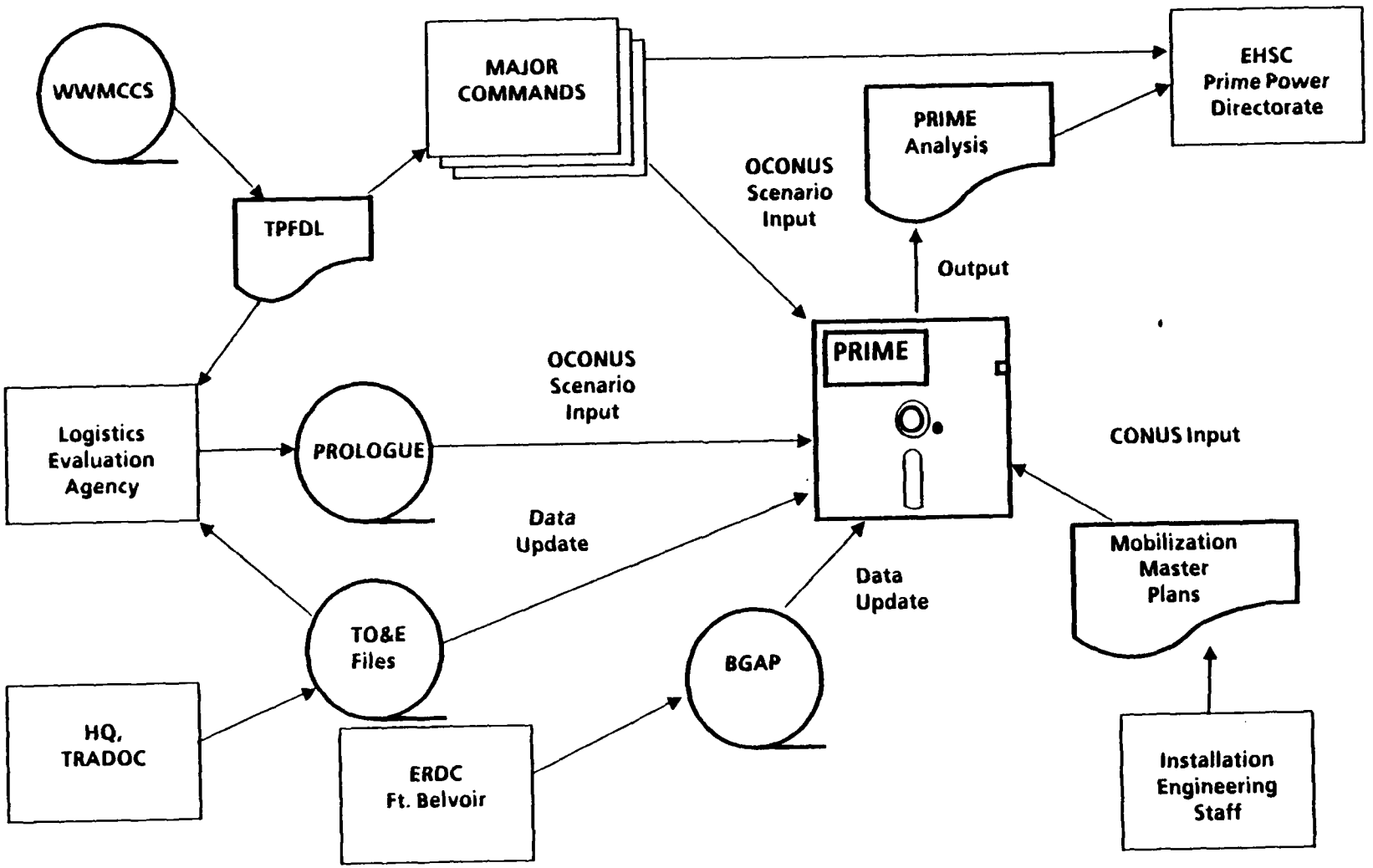


FIG. 2-3. PARTICIPATING ORGANIZATIONS AND SYSTEMS

ii. MACOMs. MACOMs choose the scenarios, produce the inputs and outputs of PRIME, confirm the validity of the output with PPD, and use that data for their planning. MACOM engineering staffs may also use PRIME to plan for contingencies not envisioned under current war plans.

iii. The Fort Belvoir Engineering Research and Development Activity (ERDA). ERDA is the sponsor of the Belvoir Generation Allocation Program (BGAP). One of the data files of that system is used as a source of Army equipment power demand data.

iv. Training and Doctrine Command (TRADOC). TRADOC maintains type TO&E files. Those files are a basic data source for periodic maintenance of PRIME.

v. LEA. LEA maintains PROLOGUE, a possible source of OCONUS input data.

vi. TRADOC and Forces Command (FORSCOM). TRADOC and FORSCOM maintain Mobilization Master Plans for their installations. These Master Plans are the basic input data source for the CONUS module of PRIME.

2.1.2 Performance

a. Input

User input to PRIME consists of scenario definitions and selected TPFDL data. PRIME currently allows for both manual input and conversion from dBase data files. Based on our experience, manual input of an actual scenario can take about 24 manhours. The scenario definition, however, can be completed in 1–2 minutes. New inputs are required only when TPFDL data undergoes significant change – at present, every 2 years. Even a relatively large scenario can be accommodated on a single 360-Kb diskette (see Section 4.3.2).

b. Output

PRIME output consists of two tables per scenario. One, an on-screen summary of the required electric loads, occupies a single screen. The other, a by-base or by-installation listing of power parameters, depends on the size of the scenario; it resides in a dBase format file and is also displayed on the computer screen, 20 records at a time.

c. Response Time

Compared to the input time, PRIME calculates power requirements very quickly. Processing time is a direct function of the size of the input file. We have found that a full scenario may take 5 – 10 minutes. The frequency of disk access and the iterative nature of the calculations encourage the use of modern processors and disk drives. We have developed and tested PRIME using IBM PC-compatible computers with 80286 chips (IBM AT-compatible). A faster chip will decrease the processing time.

d. Limitations

There are minimal constraints on the user input data or scenario size, provided that the basic input rules are followed. A scenario input file may hold up to 32,767 records. We have loaded a full-scale scenario onto a single 360-Kb diskette, so no severe scenario size limitation is anticipated. Scenarios can be split into two or more files, if necessary.

e. Error Rate

Errors in the system may occur as a result of transient power malfunctions. Since base data are saved as they are input, little data should be lost if power loss occurs. Incorrect inputs can cause errors. The system contains extensive logic-checks, with on-screen prompting and opportunities for revision during input. Nevertheless, PRIME cannot identify all erroneous entries. Inspect your scenario/ files on completion and correct errors using PRIME's edit function. Refer to Sections 4.6 and 5.6 for further details on possible errors.

f. Reliability of the Media

PRIME is distributed on floppy diskettes because the model is expected to be used a few times a year at most. Under such conditions, the diskettes should last for many years. You should follow normal precautions for making backup disks and storing disks properly. Specific instructions for backing-up program and data diskettes appear in Sections 4.5 and 5.5. If a program diskette is destroyed inadvertently, EHSC can furnish a replacement; but that will take time. Data diskettes that are destroyed can only be recovered using a backup diskette; if there is

no backup, you will probably have to do the work over. (Remember to mark backup data disks with the necessary security markings.)

2.1.3 Controls

As you are aware by now, PRIME handles classified data. The protection of classified data relies on the awareness of users. Managers can ensure the security of PRIME-generated data by training new users. We suggest that initial exercises be supervised and conducted with actual classified data. In this way, the user will be sensitized immediately to safeguarding classified output. Training should emphasize data storage on removable media only.

2.2 SYSTEM ENVIRONMENT

2.2.1 Hardware Required

PRIME requires an IBM PC or IBM-compatible microcomputer with at least 640 Kb of random access memory (RAM). The computer can have any type of read/write mass storage drives. The computer must be cleared for classified work before processing classified data.

2.2.2 Software Required

The user's computer system must have PC-DOS™ or MS-DOS™ Version 2.0 or higher to run the model. The model is delivered on three standard 360-Kb floppy diskettes formatted with MS-DOS Version 3.31. Either dBase III Plus or dBase IV is useful for examining and printing PRIME-generated data files but is not essential.

2.3 CONTINGENCIES AND ALTERNATE MODES OF OPERATION

2.3.1 Computer System Failure

Because of the routine use of classified material on PRIME, it should run on a standalone PC. Since PRIME works on a standalone computer system, we do not anticipate any differences in operation during peacetime, war, and conditions of alert. In war or other emergencies, users may want to input lists of actual unit deployments rather than planned TPFDL deployments.

In peacetime, PRIME provides information to PPD/EHSC to decide on the acquisition and deployment of its organic prime power detachments. In wartime,

that function would continue to exist; however, the updating of scenario data would be much more frequent as the conflict evolved, and the prime power detachments would be under the operational control of the theater. PRIME will be a valuable tool to direct the movement of prime power units to user bases in a fluid situation to ensure power is available as early as possible upon activation of new bases.

2.4 ASSISTANCE AND PROBLEM REPORTING

The user should seek assistance from the local point of contact for the PRIME model, usually the staff civil engineer.

The sponsor for the PRIME model is PPD/EHSC. All requests for assistance and reports of problems with the model itself should be forwarded to:

Commander, U.S. Army Engineering and Housing Support Center
ATTN: Prime Power Directorate (PRIME Model)
Casey Building
Fort Belvoir, VA 22060

Problem reports should describe the situation during which the problem arose; a description of the symptoms (what the computer does); a point of contact; and where appropriate, a recommended improvement.

Requests for assistance with on-screen difficulties may be made by telephone to PPD at CONUS Autovon 354-3982/3985. Requests for training assistance should be made in writing, citing the type of training; the dates when the training could take place; the source of training and funding; and the point of contact.

SECTION 3

ACCESS TO THE SYSTEM

3.1 FIRST-TIME USE OF THE SYSTEM

3.1.1 Equipment Familiarization

Proceed directly to Section 3.1.2 if you are already familiar with the basic layout and operation of your computer. PRIME runs on an IBM PC or IBM-compatible microcomputer. Because of the wide range of such computers in the Army inventory, users must refer to the documentation for their own machines for detailed instructions on how to use them. Nevertheless, the following generic instructions will apply to virtually all PC-DOS and MS-DOS computers.

Throughout this manual we will often refer to the essential parts of the computer, illustrated in Figure 3-1. While your machine will probably vary somewhat from the generic computer we have illustrated, it will probably include these essential elements.

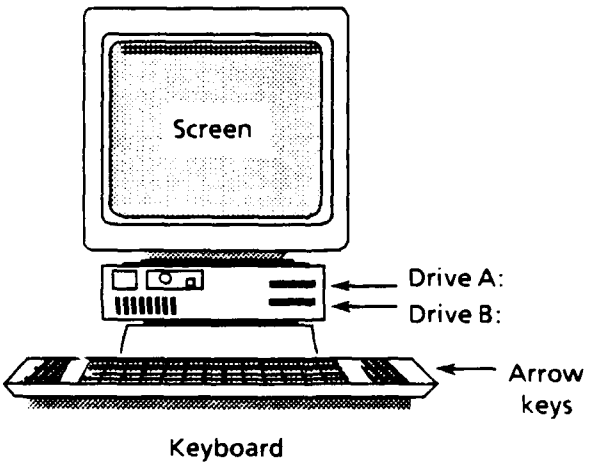


FIG. 3-1. PRIMARY PARTS OF A GENERIC MICROCOMPUTER

PRIME communicates with you via the computer screen, while you communicate with it using the keyboard. In addition to number and letter keys, the keyboard contains arrow keys and special keys with labels like *<Home>* and *<PgDn>*. These keys allow the user to move the blinking cursor that appears on the screen from place to place. They also allow you to make choices from the menus and "pick lists" that PRIME uses extensively.

Your computer requires one removable disk drive to hold the PRIME program disk and a second drive to hold the data disk (which we will tell you how to prepare). The disk drives are referred to by a letter followed by a colon, e.g., *A:* and *B:*. Your computer should have at least two removable drives. If you have a removable mass storage drive, you can operate with one drive but you must first transfer PRIME from the original floppy disk to a mass storage disk.

Before turning your computer on, place a disk containing DOS in your computer's primary drive (usually *A:* and usually, but not always, the upper drive), only then should you turn on your computer's switch. After the disk churns for a while you will be in "DOS-mode," i.e., the disk-operating system will be ready to receive commands, but no application program will be running. You do not need extensive knowledge of DOS to run PRIME. In this manual we will show you all of the DOS commands that you will need.

Many users have a special menu program (or "DOS-shell") running on their computers. If that is the case, pick the menu choice that places you in DOS. You should see a prompt on your screen that looks something like the following:

MS-DOS
Version 3.31
(c) Copyright Microsoft Corp. 1981, 1987

A:\>_

3.1.2 Access Control

PRIME does not require passwords for entry. Access to PRIME data is controlled by user "need to know."

3.1.3 Installation and Setup

Throughout this manual, we will assume that you are using a PC with two standard-capacity 360-Kb floppy disk drives named *A:* and *B:*, the most common configuration of a classified system. If your drive configuration differs from that, you should make the appropriate changes to our instructions.

Before starting PRIME for the first time, you should make working copies of the original program disks. *Never* use the original disks; use working copies and store the originals in a safe place. If a copy should become damaged, you can always make a new working copy from the original.

You will need 2–3 blank, formatted disks: two for a working copy of the OCONUS model, or one for the CONUS model plus a spare disk for data entry. To format a disk, insert your DOS disk in drive *A:* and place a blank disk (or a disk to be reused) in drive *B:*. Type the following DOS command, followed by the *<Enter>* key. (You can type DOS commands in either lower or upper case, it makes no difference.)

A:\>*format b:*

> *WARNING!! Make absolutely sure that the disk in drive B: does not contain valuable data. Any data already on the disk will be destroyed in the formatting process. Also, be careful not to type "format a:" or you will destroy your DOS disk.*

Repeat that process for each disk you wish to format. Next, remove your DOS disk from drive *A:* and replace it with an original PRIME program disk. Type the following DOS command (with a space preceding "a" and a space preceding "b") to copy all files from the PRIME disk to the blank formatted disk in drive *B:*.

A:\>*copy a:*.* b:*

The screen will display the file names as they are copied. Make sure that all of the program and data files listed in Table 3-1 are present. Write PRIME on a disk label and then place it on the working copy.[1]

---

[1]We assume that most users will be working with either the OCONUS model or the CONUS model. If you will be using both, copy all three disks to separate blank disks and label them OCONUS 1 and 2, and CONUS.

TABLE 3-1

PRIME FILES

Disk	Files
OCONUS Disk 1	PRIME1.EXE
	IN_BASE.EXE
	CALC.BAS.EXE
	UNIT.TXT
	INST.TXT
	LOAD.DAT
	I_EMPTY.BAK
	O_EMPTY.BAK
OCONUS Disk 2	IN_FILE.EXE
CONUS Disk	PRIME2.EXE
	CALC_MOB.EXE
	TRADOC.BAK
	FORSCOM.BAK

If you are copying the CONUS disk, you are done. If you are copying the OCONUS disks, replace the first OCONUS disk in drive *A:* with the second OCONUS disk and repeat the *copy* command.

> *Important: Place a write-protect sticker over the notch on the upper-right corner of each working copy disk to prevent accidentally writing classified data to the program disks.*

Store the original program disks in a safe place.

You may also find the DOS directory command useful. To display a list of files in a particular drive or directory, type the following:

A:\>*dir a:*

3.2 INITIATING A SESSION

3.2.1 Getting Organized

Before running PRIME, you should assemble the data defining the scenario upon which your MACOM will establish its prime power requirements. This is the

most important step in determining requirements. We have tried to make PRIME as user-friendly as possible. The quality of the output, however, depends very much on the quality of the input.

An OCONUS scenario for PRIME is a forecast, based on a particular Operation Plan (OPLAN), of which and how many specific types of Army units will be grouped together by location or destination. PRIME calculates peak power requirements for each such location (which we will call a base). The judgment of experienced MACOM planners is needed to choose the OPLAN upon which to base your MACOM's generator requirements. The planners may, for example, choose the worst case OPLAN to ensure the availability of sufficient generating capacity.

The OCONUS scenario that you enter into PRIME should include only the subset of units in the OPLAN that meets the following two conditions: (1) units that will be grouped with other units in a base and (2) units within bases that will stay in one place for at least 2 weeks. Include tactical units in the scenario only if they are likely to meet those two conditions.

A CONUS scenario should be based on the Mobilization Master Plans for domestic Army installations.

Because PRIME determines total scenario generator requirements, it does not need to model power requirements over time. In most cases, therefore, your OCONUS scenario should include all units that meet the above conditions regardless of arrival time at their destination. You can estimate power requirements at a particular moment in time, however, by editing the original scenario (make a copy of the original scenario file first). Simply delete the units that are scheduled to arrive later and recalculate. Similarly for CONUS mobilization scenarios, you can calculate requirements based on expected installation populations at a particular moment in time.

PRIME defines requirements for prime power in two distinct modules: OCONUS scenarios and CONUS mobilization at installations. The following paragraphs outline the data required before the user can begin a scenario.

a. OCONUS Base Scenario Module

Before entering data for an OCONUS wartime scenario, you must gather the appropriate unit and destination data from the TPFDL for the OPLAN you will use to

determine power requirements. Essentially, "locations" identified on the TPFDL will usually define bases which will require PRIME power. Army units comprising a PRIME power base should generally be located within an area no greater than 2 miles in diameter, although bases may be larger if they make use of the commercial grid.

For each scenario you must:

- Identify all the bases
- Specify the frequency of movement of each base: 7 days or less, 8–20 days, 21 days or more
- Identify their locations: in the Communications Zone (COMMZ), Rear Combat Zone (RCZ), or Forward Combat Zone (FCZ)
- Specify the composition of each base by identifying each Army combat and support unit in that base
- Specify the types of existing and prefabricated facilities present on the base, if any.

b. CONUS Mobilization Module

To determine the CONUS prime power requirement PRIME relies on information gathered from the Army's Mobilization Master Plans. You must enter the installation power supply and projected manpower loading for mobilization scenarios, using the Mobilization Master Plans as the major data source. PRIME will then recalculate the prime power requirements for CONUS mobilization installations.

3.2.2 Starting the Model

In order to run PRIME you *must* have, in addition to your computer, (1) a disk containing PC-DOS or MS-DOS, (2) a working copy or copies of the PRIME program disks (two for OCONUS or one for CONUS), and (3) at least one blank, formatted disk to hold the data you will generate with PRIME. Format the data disk or disks *before* starting PRIME.

Place the working copy of the PRIME program disk in drive *A:* and place a blank, formatted disk in drive *B:* to receive the data output from PRIME. When

working with classified data, the data disk in drive *B:* will be treated as classified at the same level as the input data. To start the OCONUS model, type the following:

A:\>*prime1*

then press <*Enter*>.

To start the CONUS model, type *prime2*, followed by <*Enter*>. The PRIME title screen will appear. Press <*Enter*> or any other key to proceed. After specifying your data drive (see Section 4.3.1 or 5.3.1), the main menu screen will appear. You will control PRIME from that menu and will return to it whenever you have completed a process or "module."

Proceed to Sections 4 and 5 for detailed instruction on running OCONUS or CONUS scenarios.

3.3 STOPPING OR SUSPENDING WORK

In an emergency, you can stop and restart your PC by holding down the <*Control*>,<*Alt*>, and <*Delete*> keys simultaneously. Depending upon which stage of PRIME you are in, you may lose some data by doing this.

Normal termination from PRIME is covered in detail in Sections 4 and 5 for OCONUS.

SECTION 4

OPERATING THE OCONUS MODULES

4.1 CAPABILITIES

PRIME estimates power requirements for OCONUS combat theater and CONUS mobilization scenarios. This section covers PRIME's OCONUS modules, while Section 5 covers the CONUS modules. PRIME allows the user to retrieve supporting data files, display scenario files for confirmation or edit, calculate the results, and display reports. It also creates dBase format output files.

PRIME's OCONUS model is organized around a main menu and four subsidiary programs or "modules," as shown in Figure 2-1. When you start PRIME, the third screen to appear will be the main menu (see Figure 4-1). From that point, you can choose which module to operate. Each module follows its own sequence of events and has its own menu screens, which we explain in detail in the sections that follow. After the module has finished its work, or when you choose to leave it, you will again return to the main menu. Once in the main menu you can repeat the module you have just run, choose another module, or exit PRIME altogether.

4.2 CONVENTIONS

PRIME follows a series of conventions to make its various operations as consistent as possible with each other as well as with other standard application programs like dBase and WordStar™. In this subsection, we explain the operation of "pick lists" and data input conventions.

a. Pick Lists

In the main menu and within most modules of PRIME you will encounter pick lists, which consist of choices displayed inside a box or window on the screen. One choice in the pick list is always highlighted. Figure 4-1 illustrates the main menu pick list.

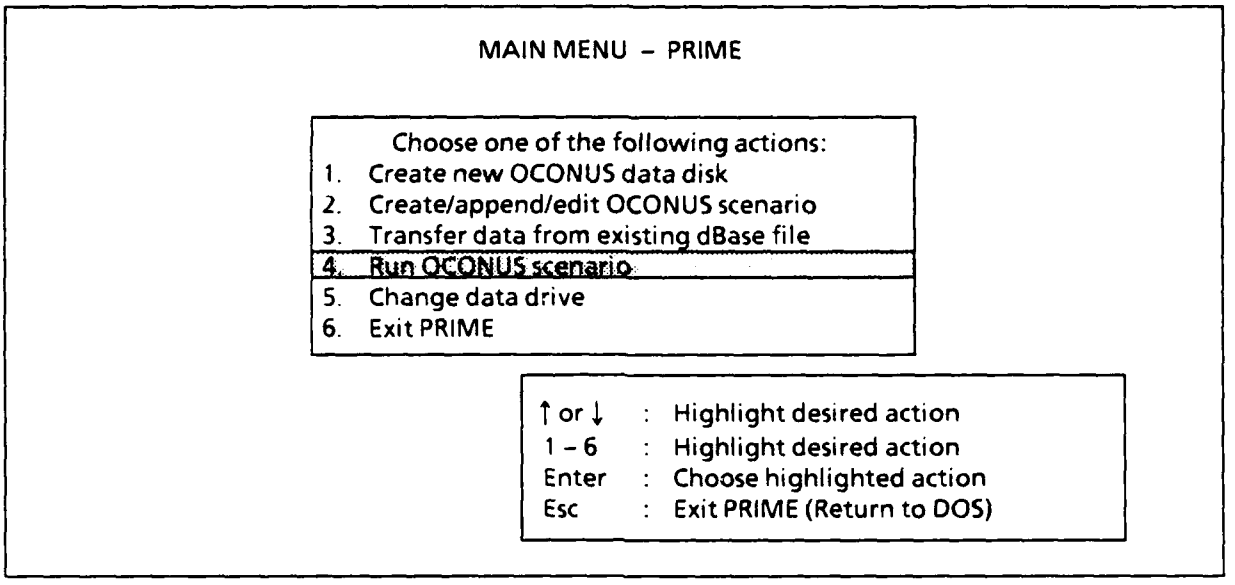


FIG. 4-1. OCONUS MAIN MENU

Sometimes all of the choices appear, sometimes only that portion that can fit inside the pick list window. To change (scroll through) the highlighted choices, use the following keys:

- The up or down arrow keys move up or down the list of choices, one line at a time. Once you have reached the top or bottom of the window, the scrolling will continue if more choices exist, or stop if they do not.
- The *<PgUp>* or *<PgDn>* keys move up or down the list, one window at a time. The *<Home>* key highlights the first line in the list.
- Pressing the first character of any choice will highlight that choice. When you press a letter or number key, PRIME looks for the first line starting with that letter or number. Whenever a pick list comprises 10 or fewer choices, we have placed a number on each line to make selection easier.

After you highlight your desired choice, you must always press the *<Enter>* key to cause PRIME to take action. If you press *<Esc>* or the right or left arrow keys while in a pick list, you will return to the next highest level. It is the same as choosing the quit option.

b. Data Input

PRIME data input follows dBase data input conventions that are based on WordStar editing commands. PRIME directs data input by highlighting a field

within the screen by enclosing it within brackets and moving the blinking cursor to the beginning of that field. The highlighted field is always labeled.

Unless the data to be entered are obvious, PRIME will present you with a default entry or a list of choices. When the first letter of each choice is highlighted, you only need to type that first letter. Required fields demand an entry or you cannot proceed. Optional fields can be skipped.

Once in a data input field, you can use the arrow keys, control keys, and the backspace key to move the cursor forward and backward through the displayed field. If several fields are highlighted at once, you can move back and forth between the fields using the *<Enter>* key or the up and down arrow keys.

You can use the following WordStar functions to edit data input within a field:

<Esc>	:	Terminate input
<PgUp>	:	Exit data input
<PgDn>	:	Exit data input
<Home>	:	Go to first editable position of current field
<End>	:	Go to last character + 1 in current field
<Del>	:	Delete character at the cursor
<Ins>	:	Toggle insert mode on/off (cursor size indicates current mode)
Back Space	:	Delete character in front of cursor
Ctrl-W	:	Same as *<Esc>*
Ctrl-R	:	Move to beginning of first field on screen
Ctrl-C	:	Move to beginning of last field on screen
Ctrl-V	:	Same as *<Ins>*
Ctrl-G	:	Same as *<Del>*
Ctrl-T	:	Delete word to the right of the cursor
Ctrl-Y	:	Delete everything to the right of the cursor
Ctrl-U	:	Restores prior data to the field (undo)
Ctrl-S	:	Move the cursor to the left one character
Ctrl-D	:	Move the cursor to the right one character
Ctrl-E	:	Move to beginning of previous field
Ctrl-X	:	Move to beginning of next field
Ctrl-Q	:	Same as *<Esc>*.

Whenever you fill a field completely, PRIME will beep and automatically move the cursor to the next field. If you do not fill the field, you must press <*Enter*> to move on. (Optionally, you can press the down arrow if the next field is highlighted.)

At the end of each input screen, PRIME prompts you with the message: "Revise data on screen? (Y/N): *N*." If you want to change something, just press <*Y*> (or <*y*>); otherwise, press <*Enter*>, <*N*>, or <*n*> and PRIME will continue to the next screen.

If you want to change something on a previous screen, PRIME will give you an opportunity later to edit any data that you input. We provide instructions on how to do this in the sections that follow.

c. Beeps

PRIME uses beeps to signal: (1) that you have reached the end of an input field, (2) that you have made an incorrect entry, or (3) that a processing error has occurred. For the latter case, PRIME will usually display an error message. The most common errors are caused by missing program or data files or a missing disk. Refer to Section 4.6 for error information.

4.3 PROCESSING PROCEDURES

The remainder of this section consists of a detailed description of how to operate the OCONUS modules of the PRIME system. The structure of the section is as follows:

4.3.1 Initial Dialog
4.3.2 Create a New OCONUS Data Disk
4.3.3 Create/Append/Edit OCONUS Base Scenario
4.3.4 Transfer Data from Existing dBase File
4.3.5 Run OCONUS Base Scenario
4.3.6 Print Output.

4.3.1 Initial Dialog

a. Starting the Model

Place the PRIME OCONUS program disk #1 in drive *A:* and a blank, formatted disk in drive *B:*. Then type the following after the DOS prompt:

A:\>*prime1*

When the title screen appears, press any key to continue. PRIME will then ask you to choose a data drive.

b. Drive Selection

Following the title screen, you are presented with a drive-selection window.

> *WARNING!! If the scenario is classified, the data files must be stored on a removable disk. Do not specify a fixed disk.*

The program defaults to a drive *B:* (usually the floppy disk). If you plan to output data to another drive, press the appropriate letter. Otherwise, press <*Enter*>; PRIME will pause for a second or two while it checks the drive and then it will display the main menu.

c. Main Menu

From the PRIME main menu, as shown in Figure 4-1, you can select one of the four OCONUS modules. You can also exit and return to DOS.

We present detailed instructions for each menu option in the sections below. Select the desired module by scrolling to it with the up/down arrow keys or by selecting the number key, then press <*Enter*> (see Section 4.2).

4.3.2 Create a New OCONUS Data Disk

a. What the Module Does

Because you are calculating prime power requirements for an overseas scenario, you will use the create/append/edit module to enter scenario data and then use the run module to produce scenario output. Before doing either, however, it is essential that you create one or more pairs of data files in which to store the OCONUS input and output data. Each pair of data files consists of a scenario input file

(I__nnnnnn.DBF) and an output file (O__nnnnnn.DBF). The input files store data on bases and the units and facilities that compose them. The output files store data on bases and their peak electric loads.

The Create Data Disk module of PRIME copies empty input/output files with the correct dBase format from the program disk to your data disk. The module must be run separately for each data disk you want to create.

The module can create up to nine pairs of data files on any one disk. In general you will want a number equal to the number of scenarios plus the number of sensitivity cases. You may not want to put them all on one disk, however, unless you are using high capacity disks. Depending on the size of your scenarios, you may want one disk for the regular scenario and another for sensitivity runs, if any.[1]

To calculate the approximate size of each data file, use the following formulas:

Input data files (I__nnnnnn.DBF):
File size in bytes = 570 + (78 * units) + (78 * facilities)

Output data files (O__nnnnnn.DBF):
File size in bytes = 1,420 + (163 * bases)

A standard 360-Kb floppy disk is capable of storing, as an example, a single scenario consisting of one scenario input file (I__nnnnnn.DBF) comprising about 4,500 unique Army units (or facilities) plus one output file (O__nnnnnn.DBF) comprising 450 different bases. Larger capacity disks will hold correspondingly more data. Note that several identical units in the same base can be stored in a single record and take up no more room than a single such unit.

b. Using the Module

Choose option 1 by pressing *<1>* then *<Enter>*. PRIME will ask you how many pairs of input/output files you want.

Type the number of file pairs you want (up to a maximum of nine per disk), press *<Enter>*, and PRIME will display each data file name as it creates it on the data disk.

---

[1]Sensitivity runs are variations of the regular scenario.

c. *Alternate Method of Creating Data Disks*

Data disks can also be prepared directly from DOS. Place OCONUS program disk #1 in drive *A:* and a blank, formatted disk in drive *B:*. Then type the following DOS commands:

A:\>*copy i__empty.bak b:i__000001.dbf*
A:\>*copy o__empty.bak b:o__000001.dbf*

If you want to create more than one pair of data files on each disk, retype the above commands, substituting sequential numbers in place of "000001" above.

You must copy the "I__EMPTY.BAK" file to a file starting with "I__" and ending with ".DBF". Similarly, you must copy the "O__EMPTY.BAK" file to a file starting with "O__" and ending with ".DBF". The remaining six characters are optional as long as they are *identical* in *both* the input and output files (they must also stick to DOS's naming rules). You can also use DOS to rename your data files as long as you adhere to the rules of both PRIME and DOS.

4.3.3 Create/Append/Edit OCONUS Base Scenario

a. *What the Module Does*

This module is used to input data for a new scenario, to add more units and/or bases to a scenario you have already started, or to edit information already in a scenario. The first pick list following the title screen will ask which of these options you want.

> *WARNING!! Editing a scenario will change the scenario stored on the disk. Use a backup disk to avoid destroying the original scenario until the changes have been entered successfully.*

b. *Scenario Selection*

Choose option 2 by pressing <2> then <*Enter*>. PRIME will ask you whether you want to create a new scenario, add to one that you have already started, or edit an existing scenario. After you choose an option, a pick list will appear listing the scenario input files on the data disk. If you pick a file that already contains data, PRIME will ask, "Is this the file you want? (Y/N):". Press <*N*> or <*n*> if you do not want to overwrite and thus destroy the existing data. If, on the other hand, you

have chosen to add to or edit an existing scenario and the file you pick is empty, PRIME will ask you to choose another file.

If the wrong diskette is in drive *B:*, press <*Esc*> while the file list is on the screen to return to the main menu. Replace the diskette in drive *B:* with the correct one and choose option 2 again.

If you are unsure about the file contents, press <*N*> and then <*Esc*> to return to the main menu, then select option 2 and the edit option to scan the file contents. (Any changes made to the scenarios while scanning them will be stored on the disk.)

When you find the desired scenario file, press <*Enter*> to continue. Then press <*Y*> if PRIME asks you "Is this the file you want? (Y/N):". PRIME will spend a few seconds loading standard unit data from an existing data file.

c. Creating a New Scenario

When you create a new scenario input file, PRIME will first display the screen shown in Figure 4-2. Use that screen to enter information identifying the specific scenario. This entry screen contains fields for entering the MACOM, the applicable OPLAN, whether or not host-nation support agreements exist, and the security classification of your input data. Two optional entry fields for comments may include any additional information about the scenario.

First type in the MACOM name. See Section 4.2 for the data input and editing commands. When the entry for each field is complete, press <*Enter*> to advance the cursor to the next field.

You must make entries in the MACOM, OPLAN, host-nation, and classification fields before PRIME will continue. The comment fields may be left blank.

When the last field in this form is filled, PRIME will display the following message at the bottom of the screen:

Revise data on screen? (Y/N): N

If you want to change any of the data you have just entered, press <*Y*> for "yes" and you will return to the first field. Fields that do not require changing may

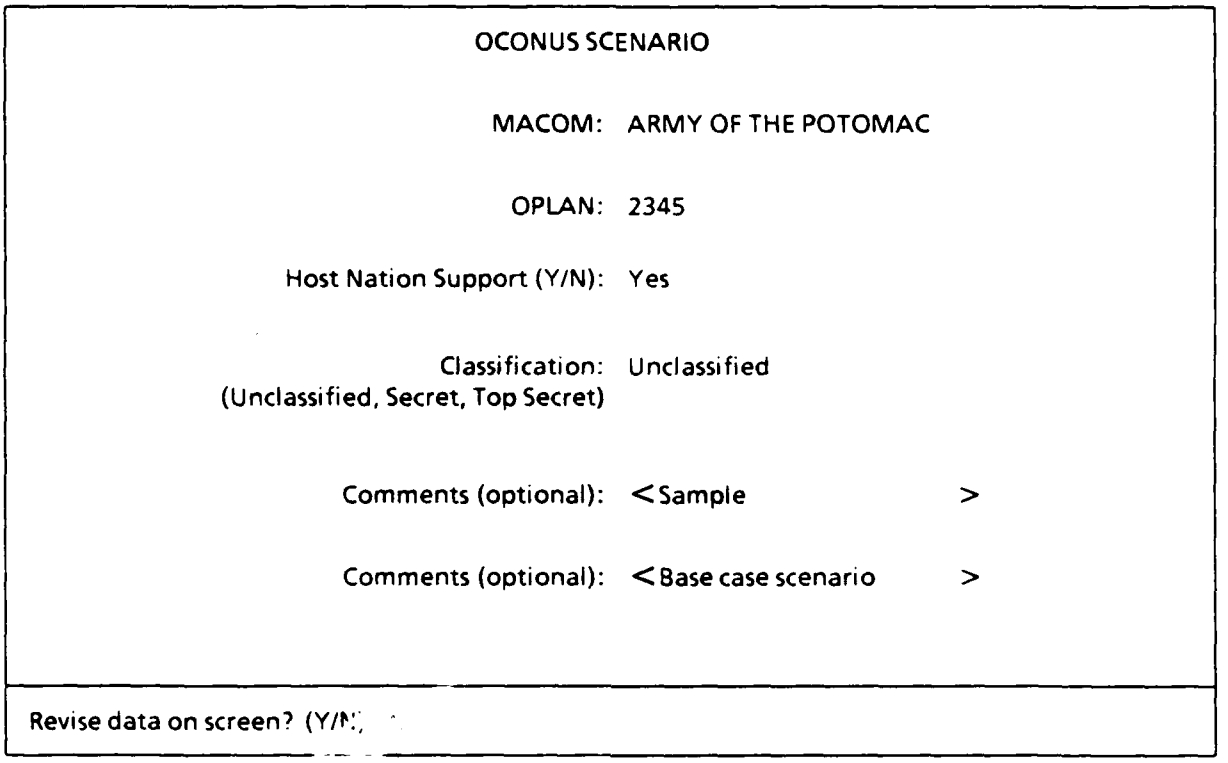


FIG. 4-2. SCENARIO DESCRIPTION

be skipped by pressing the *<Enter>* key when the field is highlighted. Otherwise, type *<N>* for "no," or press *<Enter>* to continue to the next screen.

d. Base Definition

Figure 4-3 illustrates the next screen in which information is entered about the first base in the scenario. A base is essentially a TPFDL location or destination. This screen has five entry fields: base name, echelon, base location, movement frequency of the base, and host-nation support. The model assigns a sequential base-input number for each base entered; this number is used internally by PRIME but is irrelevant to you except possibly for keeping track of base entries.

Enter a representative, unique, and easily remembered base name. As a rule, it will be the location name from the TPFDL. After typing in the base name, press *<Enter>* to move the cursor to the next field.

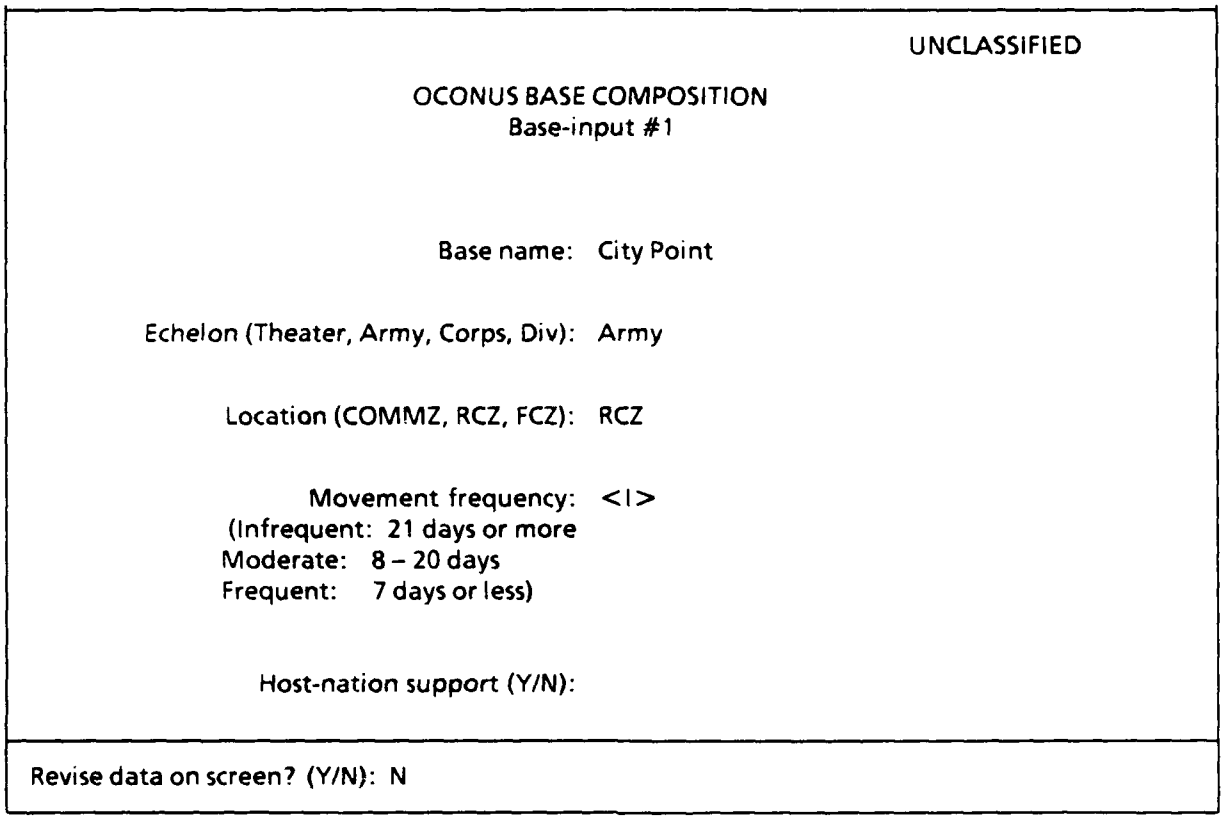


FIG. 4-3. BASE DESCRIPTION

The echelon (Theater, Army, or Corps) identifies the echelon headquarters responsible for that base so that summary reports can be generated. Type the first letter of the correct choice, or press <*Enter*> if the default condition is correct.

The location of the base may be in the COMMZ, the RCZ, or the FCZ. Press the first letter of the location (shown in bold type), or press <*Enter*> if the default condition is correct.

Movement frequency refers to the length of time that a base is expected to remain in one place. This is important because prime power requires time to set up and take down distribution cables and transformers. Movement frequency applies to the base, not to a particular unit; thus, if units rotate through a base for 7 days at a time, and 6 groups of units move through it, the base itself has an expected duration of 42 days, not 7 days.

There is no special significance to the default values, which are "Base Number x" (where x matches the sequential number under the title), "Corps," "COMMZ," and "Infrequent," respectively.

When you have entered data for all of the fields, PRIME will respond with the data revision message.

e. Base Composition

Using this screen, you input the Army TO&E units and facilities that comprise the base. The bases can consist of any combination of Army TO&E support units, combat units, prefabricated installations, and/or prefabricated facilities. For each of these component pieces, established electrical characteristics are resident in PRIME's data files. The base will be "constructed" for PRIME by adding the various Army units and facility components to the base one at a time until it is complete. This is the heart of the data entry process and care must be taken to enter data correctly. The following paragraphs discuss the entry of units and facilities. When creating a scenario, the model assumes that the first entry is a unit rather than a facility.

The identification of Army units by Standard Requirements Code (SRC) is at the heart of the OCONUS portion of PRIME, which contains unit name and electric load data for more than 1,200 SRCs. To calculate peak loads, PRIME links the units in the scenario input file with the units in the electrical load file using SRCs.

A unit's SRC identifies that unit's TO&E, plus variations and level of organization. While a full SRC can be up to 12 characters long (the thirteenth is not currently used), PRIME needs to use only the first 9 characters. The SRC structure is shown in Table 4-1. The first 2 characters represent the proponent branch: 05 represents engineer units, for example.

TABLE 4-1

SRC STRUCTURE

Position	Numbers/letters	Content
1 - 2	Numbers	Branch of proponent
3 - 5	Numbers	Organizational elements of branch or major subdivision
6	Letter	TO&E series
7 - 9	Numbers/letters	Unit variation (and year published prior to L-edition TO&Es)
10	Number	Level
11 - 12	Numbers	Paragraph
13		Not used

The cursor is located at the beginning of the SRC field. You can enter a unit in a variety of ways:

- Simply press *<Enter>*. A pick list will appear displaying the first two characters of the SRC and the corresponding Army branches: *01 – Aviation* through *97 – Division Training*. Pick the appropriate branch and PRIME will replace the branch pick list with one that displays SRCs and unit names for the branch that you selected. Scroll through the pick list to find the desired unit and press *<Enter>*.

- Type in a partial SRC. The pick list will now display SRCs starting with or close to the characters you have typed. Scroll through the pick list to find the desired unit and press *<Enter>*. PRIME will display the full SRC and unit names in the correct fields.

- Type in the complete 9-character SRC. If PRIME has data on that SRC, it will respond by placing the unit name in the next field and will then place the cursor in the Number of Units field. Otherwise, PRIME will display a pick list, highlighting the closest match it could find.

An Army SRC consists of five numbers, followed by a letter, followed by three numbers or letters. PRIME will not accept any other format and will beep if you type a number instead of a letter and vice-versa. If you get lost, just press *<Enter>* and scroll through the pick list of branch names. You cannot edit the unit name; it is a standard name associated with a particular SRC. PRIME displays the name for convenience only; all calculations are based on the SRC.

Figure 4-4 shows how the screen would look if you had typed the first three numbers of an SRC, "276". The Army units are sorted by SRC. Use the cursor to select the correct SRC, or, if it is not included, an SRC for a similar-type unit. PRIME contains standard TO&Es, not the many possible unit Modified Tables of Organizations and Equipment (MTO&Es). Pressing *<Esc>* when the pick list is displayed will close the pick list and put you back into the SRC input field.

UNCLASSIFIED

BASE COMPOSITION

Base-input #1: City Point
Component units/facilities:

#	SRC:	Unit name	Number of units
1	276		

SRC	Unit name
19272H420	HHC, MP GROUP (MP BRIGADE)
19282H500	HHC, MP PW BDE
19316H600	HHC, MP BN (CNF FAC)
19417D500	MP CO, ID (MTZ-13K)
19620H8GB	CID DET (FIELD OFFICE)
27600H6AA	MILITARY LAW CENTER TEAM A
27600H6GA	INTERNATIONAL LAW TEAM GA
27600H6HA	COURT-MARTIAL TEAM HA
27600H6HB	COURT-MARTIAL TEAM HB
29003H500	DIV MMC, AIM DIV
29006H000	HHD, S&T BN, AIM DIV

FIG. 4-4. UNIT PICK LIST

The unit selection pick list will disappear from the screen and the selected SRC and unit name will be added to the base composition list. The cursor will now be positioned in the Number of Units field which will display a default value of 1 (see Figure 4-5). Enter the correct number of units and press *<Enter>*. (When you enter a number, the default remains until you press *<Enter>*. Figure 4-5 shows what happens after you enter "2" but before you press *<Enter>*.)

The familiar revision message will appear in the bottom-left-hand corner of the screen. If you type *<Y>*, PRIME deletes the unit just entered and begins the unit selection process all over again. You cannot edit an existing SRC or a unit name. If

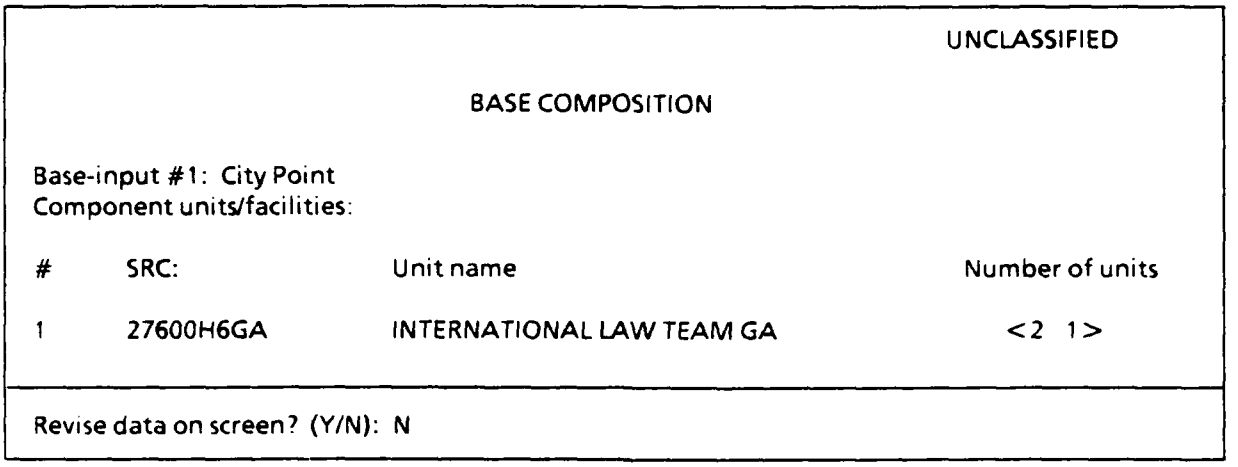


FIG. 4-5. EDITING THE UNIT QUANTITY

you type <*N*> or press <*Enter*>, PRIME displays a menu (see Figure 4-6). You can choose to add another unit, add a facility, or finish the current base and start another.

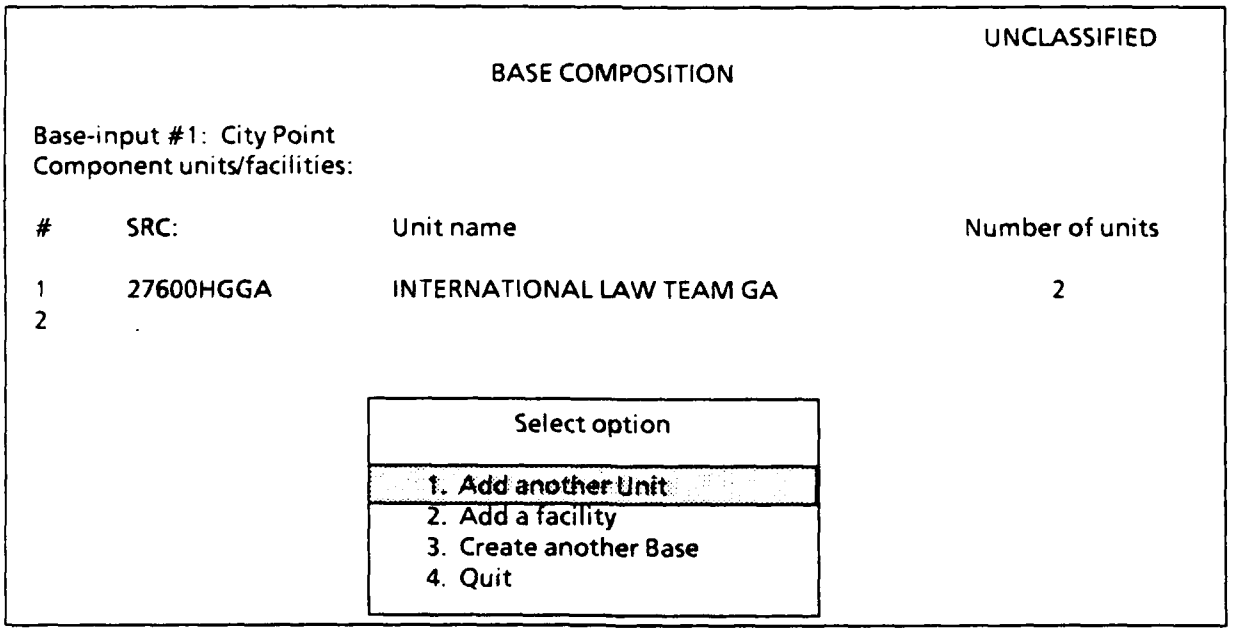


FIG. 4-6. SELECTING OPTIONS

You can add another unit or a facility to the base by selecting the appropriate option. The process is identical to that used to enter the first unit: identify a unit SRC or facility type and provide a quantity. Base facilities are improvements to the

base (such as motor parks, etc.) and temporary structures. If you add a facility, PRIME jumps to the Unit Name field. Either press *<Enter>* or type the first few letters of the facility name (for instance, *<HO>* for "HOUSING" and then press *<Enter>*). A list of facility types is displayed (see Figure 4-7). Select the correct facility and then enter the number of such facilities. If you do not know the standard facility name, scroll through the pick list to find the description that fits best.

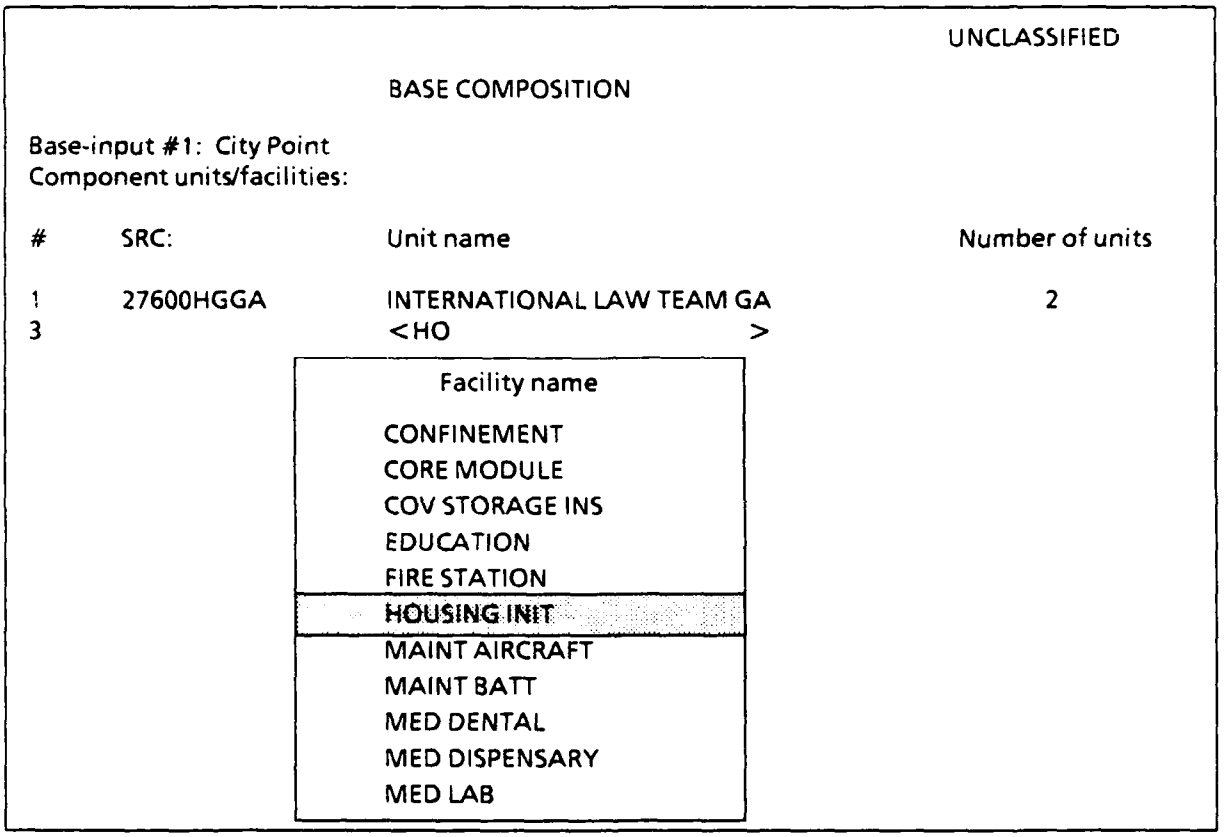


FIG. 4-7. FACILITY PICK LIST

Continue entering units and facilities until all the desired units and facilities have been added to the current base. When the base composition is complete, start the next base (base identification number 2 and so forth) by selecting "Create Another Base".

A scenario is complete when all the bases and fixed installations have been added that completely identify that scenario. When done, select "Quit" from the menu and PRIME will place you in edit mode. You can scroll through the edit

window to review your input. You can also choose to alter any of your inputs, delete some, or add units. Instructions to append and edit scenario data are in the next section.

To leave the edit menu, press <*Esc*> and then <*Y*>.

If necessary, input can be stopped at any point by selecting "Quit" at the menu prompt instead of adding another unit or facility. The scenario can be resumed through the append function (described below).

f. Appending/Editing Scenario Data

Select the "add to an existing file" option to continue with an incomplete scenario. Select the "edit an existing file option" to make changes to an existing scenario input file, possibly as a result of errors or changes to the TPFDL.

Adding to a scenario is the same as the original entry process: PRIME moves to the bottom of the scenario listing as it exists in the current file and allows you to continue adding units and facilities to the *last* base in the file. You can also add bases.

PRIME displays all of the scenario input at the conclusion of both the create and append options. PRIME also displays the entire scenario when you choose the edit option. You can then highlight the entry to be edited (see Figure 4-8). Once you press <*Enter*> PRIME presents a listing of the following 10 choices (see Figure 4-9):

1. *Delete/undelete a unit or facility.* The item under the cursor at the time that <*Enter*> is pressed is marked for deletion with an asterisk (see Figure 4-8). As a safety measure, PRIME does *not* physically remove the item from the input file until you choose edit option 7 – Remove Deleted Items. If an item is accidentally marked for deletion, selecting delete/undelete again will remove the deletion marker. (*Deleted units will be excluded from the calculation of a base's peak load.)*

2. *Change unit or facility quantities.* Use this option to change the number of highlighted units.

3. *Insert a unit or facility.* This allows you to add more units or facilities to the highlighted base. You can highlight any unit in the base, PRIME will then add the new unit or facility to that base. PRIME first adds the unit to the end of the file, then sorts the file by base and SRC when you exit to the main menu.

Base name		SRC	Unit name	Quantity
				UNCLASSIFIED
ARMY OF THE POTOMAC Sample Base Case Scenario				
1	City Point	27600H6GA	INTERNATIONAL LAW TEAM GA	2
1	City Point	F.72510AA	HOUSING INIT	2
*1	City Point	29043J000	DMMC, AIR ASLT DIV	2
2	Harper's Ferry	14500H6AC	FINANCE SERVICE ORG TM AC	2
2	Harper's Ferry	54023H510	COSCOM MMC-FWD DEPLOYED CO	3
2	Harper's Ferry	29006H000	HHD, S&T BN, AIM DIV	2
2	Harper's Ferry	63126D500	LT MAINT CO, SPT BN (MAIN)	4
2	Harper's Ferry	F.42183AA	AMMO STORAGE	7
Select using the cursor keys, then press <Enter> to confirm (or <Esc> to Quit)				

FIG. 4-8. INPUT FILE DISPLAY

UNCLASSIFIED

Base name: Harper's Ferry
Unit: HHD, S&T BN, AIM DIV
SRC: 29006H000
Quantity: 2

Select editing option
1 Delete/undelete Unit
2 Change Unit quantity
3 Add Unit(s) to Base
4 Delete/undelete entire Base
5 Edit Base data
6 Edit Header data
7 Remove deleted records
8 Sort all records
9 Choose another record
0 Quit (return to main menu)

FIG. 4-9. EDIT MENU

4. *Delete/undelete an entire base.* This marks *all* of the items on a base for deletion. For example, if the cursor is on item 2 of base 2 when this option is selected, all of the items in base 2 will be marked for deletion. Again, reselection will remove the markers and, in any case, the base will *not* be physically removed unless you choose option 7. *(Deleted bases will be excluded from the calculation of prime power requirements.)*

5. *Edit base data.* This allows changes to the base identification data: base name, echelon, location, and frequency.

6. *Edit header data.* This allows changes to the scenario identification data. (This option is picked automatically if you highlight any one of the first three lines in the edit window.)

7. *Remove deleted records.* This command actually erases those records marked for deletion (displayed with an asterisk). Until you select this option, erasure does not occur, even after quitting the edit routine. *Once selected, the erased records cannot be recovered.*

8. *Sort all records.* This command is used to reassemble base units and facilities if they were entered out of sequence. It sorts bases into the order they were originally entered and sorts units by SRC. If you do not select this option, PRIME will sort the file anyway when you quit.

9. *Choose another record.* This command allows recovery from selection of the wrong record.

10. *Quit.* You can also return to the main menu directly from the Edit window by pressing the *<Esc>* key. (Remember, you must select the remove deleted items command prior to quit if you want to erase deleted records.)

After you have selected one of the edit options, you can scroll through the scenario list and select another unit to edit. (The next time you see the edit selection window, all of the edit options may not be displayed in the window; simply scroll up with the arrow keys to display all of the options.)

4.3.4 Transfer Data from Existing dBase File

a. What the Module Does

If you are able to retrieve TPFDL data in automated form and can place that data either directly or indirectly (via a data-format translation) into dBase file format, then you can reduce the time needed to input data manually by using the Transfer Data Module of PRIME. This module reads a dBase file in a specific format and copies the data to a PRIME input file ready for PRIME to run it. PRIME input

data files created via this module can also be edited by the Create/Edit Module in exactly the same way as any other OCONUS input file.

b. Preparing the dBase File

If you have a dBase file that contains TPFDL scenario data, you must first use dBase (or a compatible program) to modify the structure of that file (or create a new one) with the *exact* format shown in Table 4-2. Refer to your dBase manual for the appropriate commands.

TABLE 4-2

INPUT FILE FORMAT (dBASE)

Field	Field name	Type	Width	Dec[a]
1	BASE_NUM	Numeric	4	-
2	BASE_NAME	Character	28	-
3	ECHELON	Numeric	1	-
4	LOCATION	Numeric	1	-
5	MOVEMENT	Numeric	2	-
6	HOST_NTN	Logical	1	-
7	UNIT_NAME	Character	28	-
8	SRC	Character	9	-
9	UNIT_QTY	Numeric	3	-
Total			78[b]	

[a] Number of decimal plates.

[b] Total includes hidden deletion field

Only four fields need to contain valid data, as follows:

1. BASE_NUM: Leave empty
2. *BASE_NAME: Base or destination name*
3. ECHELON: Leave empty
4. LOCATION: Leave empty
5. MOVEMENT: Leave empty
6. HOST/NTN: Leave empty

7. *UNIT_NAME: Unit name*
8. *SRC: Standard Requirement Code*
9. *UNIT_QTY: Must be 1 unless you have rolled several identical units into one record.*

As shown above, the other fields must be present but their contents are unimportant since the PRIME Transfer Module will overwrite them.

PRIME uses the BASE_NAME field to sort the units into discrete bases. Therefore, all records that you want to be grouped together in one base must have an identical label in the BASE_NAME field. For example, the PRIME Transfer Module treats "Harper's Ferry," "Harper's Ferry, VA," and "HARPER'S FERRY" as three different bases.

You must be careful when using automated data transfer that the TPFDL data has been well edited before transfer. For example, we have found that unsourced units in a TPFDL may not be accompanied by an SRC. When calculating power requirements, PRIME will ignore all records with a missing or invalid SRC. (The PRIME Run Module creates an ASCII exception file containing all SRCs for which it does not find a match in LOAD.DAT.)[2]

Although your dBase file can have any name, it must end with the extension "DBF". Also, it should not begin with I_ or O_ to avoid confusion with PRIME input or output files.

Once you have created a dBase input file that conforms to the format in Table 4-1, copy it onto a blank, formatted disk and place that disk in the data drive. Invoke option 1 from the main menu and create one pair of empty PRIME data files on the same disk. Your data disk will now contain your dBase file, one PRIME input file, and one PRIME output file.

c. Converting the dBase File

Select option 3 from the main menu to transfer the TPFDL data to the PRIME input file. The model will prompt you to replace OCONUS program disk #1 with program disk #2. PRIME will then ask you to first select your dBase file, and second,

[2]You can still use this module to input records with SRCs and then use the Append Module to input the remaining units manually.

to select an input file (do *not* select the same file for both). PRIME will sort and copy TPFDL data from your original dBase file to the input file.

PRIME then displays the scenario header screen shown in Figure 4-2. Follow the instructions in Section 4.3.3.c. to enter scenario data. PRIME follows the scenario screen with base data screens (see Figure 4-3) for each different base name in your original dBase file (in alphabetical order). Again, follow the instructions in Section 4.3.3.c. for that screen.

Once PRIME has asked you for data on each base in the file, it will return you to the main menu, after prompting you to replace OCONUS disk #1 in the program drive. To review your data, choose option 2 and select edit. Pick the input file you have just created and review it; you can also make any necessary changes at this time.

4.3.5 Run OCONUS Base Scenario

a. What the Module Does

When the base composition data have been entered and verified for a given wartime scenario, you can use PRIME's methodology to calculate the electric power requirements of that scenario. This module displays its results in summary and in detail and also creates an output file. A scenario input file named I_nnnnnn.DBF *must* have an accompanying file named O_nnnnnn.DBF to receive the output data. (The two file names must be identical except for the first character.)

b. Selecting a Scenario

When you select the run module, PRIME lists the scenario input files stored on the data disk. Select the desired scenario from the pick list. PRIME will display information about that scenario file and ask if you want that file. Press <*N*> to pick another file or <*Y*> to proceed.

c. Calculation Phase

PRIME displays a progression of message boxes on the screen to show you its progress through the calculation. The time taken to calculate a scenario depends upon the size of the scenario and the speed of the computer.

d. Output

When the calculations are complete, PRIME will display the power requirements summary, showing the base power requirements arranged in kw increments (see Figure 4-10). The summary shows the number of bases which have requirements in each category; the lowest category (0 – 400 kw) shows the number of bases for which the power requirements are normally too low to require prime power. This summary is PRIME's estimate of the electric power requirements of that scenario. (Section 4.3.6 explains the production of printouts.)

UNCLASSIFIED

LOAD DISTRIBUTION TABLE

			Number of Bases			
			COMMZ	RCZ	FCZ	Total
0	through	400 kw:	1	0	0	1
401	through	1,000 kw:	5	2	0	7
1,001	through	1,500 kw:	4	0	0	4
1,501	through	2,000 kw:	0	0	0	0
2,001	through	2,500 kw:	0	0	0	0
	Over	2,500 kw:	0	0	0	0

Press any key to continue

FIG. 4-10. LOAD DISTRIBUTION TABLE

Press any key to move to the base-by-base listing (see Figure 4-11) which displays the base name, location, frequency of movement (in days), and peak load requirements for each base: base power factor, peak kw, and whether or not host-nation power is promised.

Pressing any key returns you to the main menu. (The up and down arrow keys will move the highlighted bar but produce no other action.)

Base name	Location	Days	pf	Kw	Mat	HN
MACOM:	ARMY OF THE POTOMAC			UNCLASSIFIED		
OPLAN:	2345					
Host-nation:	Yes					
Comments:	Sample					
	Base case scenario					
City Point	RCZ	8 – 20	0.987	1,133	4.3%	Yes
Harper's Ferry	COMMZ	>20	0.992	1,842	2.1%	No

Press <Enter> to return to main menu . . .

FIG. 4-11. OUTPUT FILE DISPLAY

4.3.6 Print Output

The model provides solution summaries at the end of the Run Module. Those are displayed on the computer screen, but the output is also sent to a file on your disk. To print results, you can hold down the <*Shift*> key and press <*Prt Sc*> (the print screen key). That will print out everything you see displayed on the screen.

Even better, access the files through dBase and use dBase commands to print those files. Appendix C explains the dBase file formats and data codes used in both the input and output files.

> *WARNING!! The printout is classified at the same level as the source documents. Its classification level should be marked by hand or printed on the header.*

4.4 RELATED PROCESSING

Other than the generation of the supporting databases referred to in earlier sections, there is no off-line processing required by PRIME. Users have no responsibility for database maintenance except for their own scenarios.

4.5 DATA BACKUP

4.5.1 General

In Section 3.1.3, it was recommended that users create backup copies of the model. In addition, once scenarios have been created, the data disks should be backed up. The backup disks should not be destroyed after the scenario is modified in PRIME until the user confirms the accuracy of the newly modified files and until the user confirms that the old scenario has been superseded and will not reappear.

4.5.2 Procedure

Backing up a classified disk precludes the use of a fixed disk on a noncleared machine. This manual will explain the procedure for backing up a floppy diskette onto another diskette drive: users having unique hardware configurations will have to consult their PC user manuals.

Exit PRIME and return to the DOS prompt *A:\>*.

Place a write-protect tab onto the source disk – the one containing the data to be backed up – to protect against mistakes, then place that disk into the *A:* drive.

Place a blank, formatted, labeled diskette into the *B:* drive. (See Section 3.1.3 for instructions on formatting a disk.) Type the following DOS command:

A>*copy a:*.* b:*

Once the copy operation is complete, the disk in the *B:* drive contains a copy of all the files on the source disk.

> *WARNING!! If the data is classified, so is the backup diskette. It must be entered into the classified documents register.*

4.6 RECOVERY FROM ERRORS AND MALFUNCTIONS

PRIME uses a variety of error handling techniques. In the event of an error or malfunction, PRIME will usually display a message informing the user about the error. PRIME then ceases operations at the current level and returns to a higher level. That is, if PRIME is in one of the modules when an error occurs, it will

normally display an error message, then return to the main menu. Following is a description of PRIME's error traps and messages.

a. Program Files Missing

If one or more of the program files or program data files is missing from the program disk, PRIME will display the names of the missing files and pause for the user to press any key, after which it returns to DOS.

If this happens, recopy all of the files from the appropriate OCONUS master program disk back onto your working copy. The instructions for this procedure are in Section 3.1.3.

b. Modules Fail to Operate

Whenever you make a choice from the main menu, PRIME invokes one of its subsidiary programs. PRIME has already checked that the program exists before displaying the menu, so any errors while calling a subsidiary program will usually be more subtle than missing files. These are the possible error messages that could be displayed on the screen in the event a module fails:

- *Cannot find file.* Most commonly occurs if you have removed the program disk after the main menu has been displayed. Replace the program disk in the current drive, usually *A:*.
- *Cannot find path.* Is the program disk still in place? Are all of your program files in the same directory as PRIME1.EXE?
- *Too many files are open.* Occasionally, PRIME has two or more files open (for reading and writing data) at the same time. If you get this message, you must reconfigure your CONFIG.SYS file.
- *DOS denied access to file.* Something is wrong with the file. Make a new working copy from the master program disk. See Section 3.1.3.
- *Not enough computer memory (640K required).* Your machine does not have enough Random Access Memory (RAM). Install more memory or run PRIME on another PC with at least 640-Kb of RAM.

- *Drive x does not exist on your system.* PRIME has already checked to make sure the data drive exists. This error indicates either that you have disconnected one of your drives (possibly inadvertently) or that a hardware malfunction exists.

- *DOS error #x.* In the unlikely event that you see this message, refer to your DOS manual for a description of the error.

c. Input File Contains No Data

If you attempt to edit (or add data to) a file that has no data in it, PRIME will tell you that the file you have selected "contains no scenario data." Recovery is simple; PRIME will redisplay the pick list of input files and ask you to choose another file.

d. Sort Errors

The OCONUS Edit Module re-sorts the units by base and SRC data after you add new or additional units. These are possible errors that can occur during that process:

- *Not enough memory available.* Make sure your computer has at least 640-Kb of RAM.

- *File contains more than 32,767 records.* Your input data file is too large. It is highly unlikely that a scenario file will ever be this large. If it is, split the input file into two or more files.

- *Write error during sort; disk is full or contains a bad area.* Check your disk using the DOS command "CHKDSK [drive]." If the disk is full, move some of your files to another disk and try again.

- *Read error during sort; disk probably contains a bad area.* Copy your data files onto a new disk and throw away the old one.

- *Disk or directory is full or disk is locked.* If the disk is full, move some of your files to another disk and try again. Otherwise, make sure your data drive is working properly.

- *Error, unsuccessful sort.* You will only see this message in the unlikely event that an error occurs that is not one of the above.

e. Other Errors

If an error occurs that does not cause PRIME to display an error message and exit gracefully from the error, first check whether your system is set up properly (see

Section 3) and that your PC and peripherals are in working order. As a last resort, make a new copy of the PRIME program disks and try again. If you still get an unexplained error, please refer that error to EHSC for diagnosis. EHSC will take steps to prevent a recurrence of that error.

4.7 MESSAGES

See Sections 4.3 and 4.6.

SECTION 5

OPERATING THE CONUS MODULES

5.1 CAPABILITIES

PRIME estimates power requirements for OCONUS combat theater scenarios and CONUS mobilization scenarios. Section 4 covered PRIME's OCONUS modules, while this section covers the CONUS modules. PRIME retrieves supporting data files, displays scenario files for confirmation or edit, calculates the results, and displays reports, all from the PC. It also creates dBase format output files.

PRIME's CONUS model is organized around a main menu and two subsidiary programs or "modules" as shown in Figure 2-2. When you start PRIME, the third screen to appear will be the main menu (see Figure 5-1). From that point, you can choose which module to operate. Both modules follow their own sequence of events and have their own menu screens, which we explain in detail in the sections that follow. After the module has finished its work, or when you choose to leave it, you will again return to the main menu. Once in the main menu, you can repeat the module you have just run, choose the other module, or exit PRIME.

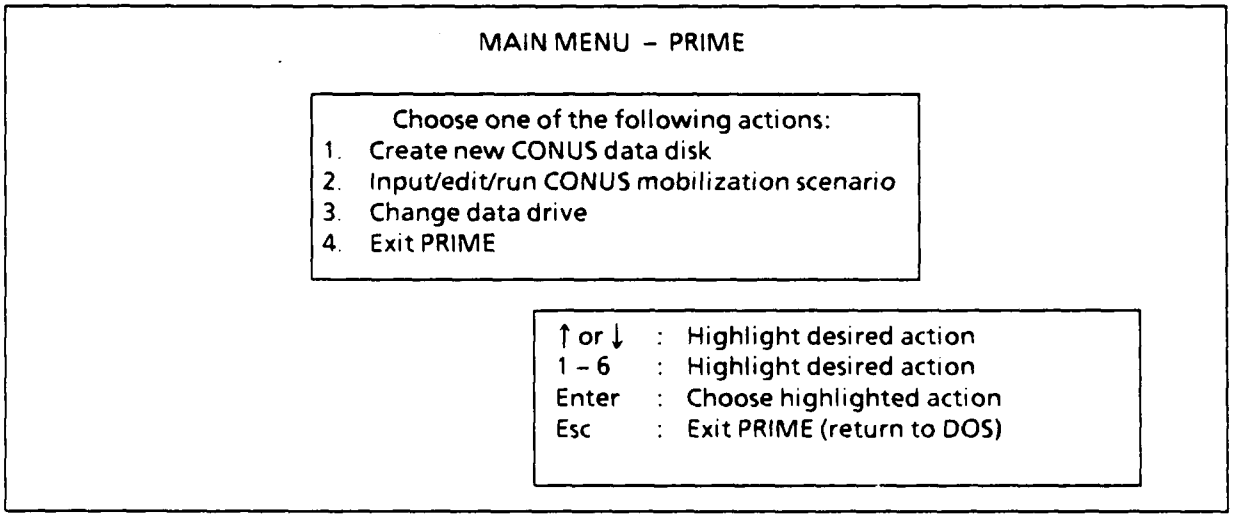


FIG. 5-1. CONUS MAIN MENU

5.2 CONVENTIONS

PRIME follows a series of conventions to make its various operations as consistent as possible with each other as well as with other standard application programs like dBase and WordStar™. In this subsection, we explain the operation of "pick lists" and data input conventions.

a. Pick Lists

In the main menu, and within most modules of PRIME, you will encounter pick lists which consist of choices displayed inside a box or window on the screen. One choice in the pick list is always highlighted. Figure 5-1 illustrates the main menu pick list. Sometimes all of the choices appear and sometimes only that portion that can fit inside the pick list window. To change (scroll through) the highlighted choices, use the following keys:

- The up or down arrow keys move up or down the list of choices, one line at a time. Once you have reached the top or bottom of the window, the scrolling will continue if more choices exist, or stop if they do not.
- The *<PgUp>* or *<PgDn>* keys move up or down the list, one window at a time. The *<Home>* key highlights the first line in the list.
- Pressing the first character of any choice will highlight that choice. When you press a letter or number key, PRIME looks for the first line starting with that letter or number. Whenever a pick list comprises ten or fewer choices, we have placed a number on each line to make highlighting easier.

After you highlight your desired choice, you must always press the *<Enter>* key to cause PRIME to take action. If you press *<Esc>* or the right or left arrow keys while in a pick list, you will return to the next highest level. It is the same as choosing the quit option.

b. Data Input

PRIME data input follows dBase data input conventions that are based on WordStar editing commands. PRIME directs data input by highlighting a field within the screen, enclosing it within brackets, and moving the blinking cursor to the beginning of that field. The highlighted field is always labeled.

Unless the data to be input are obvious, PRIME will present you with a default entry or a list of choices. When the first letter of each choice is highlighted, you only

need to type that first letter. Required fields demand an entry or you cannot proceed. Optional fields can be omitted.

Once in a data input field, you can use the arrow keys, control keys, and backspace key to move the cursor forward and backward through the displayed field. If several fields are highlighted at once, you can move back and forth between the fields using the *<Enter>* key or the up and down arrow keys.

You can use the following WordStar functions to edit data input:

<Esc>	:	Terminate input
<PgUp>	:	Exit data input
<PgDn>	:	Exit data input
<Home>	:	Go to first editable position of current field
<End>	:	Go to last character + 1 in current field
<Del>	:	Delete character at the cursor
<Ins>	:	Toggle insert mode on/off (cursor size indicates current mode)
Back Space	:	Delete character in front of cursor
Ctrl-W	:	Same as *<Esc>*
Ctrl-R	:	Move to beginning of first field on screen
Ctrl-C	:	Move to beginning of last field on screen
Ctrl-V	:	Same as *<Ins>*
Ctrl-G	:	Same as *<Del>*
Ctrl-T	:	Delete word to the right of the cursor
Ctrl-Y	:	Delete everything to the right of the cursor
Ctrl-U	:	Restores prior data to the field (undo)
Ctrl-S	:	Move the cursor to the left one character
Ctrl-D	:	Move the cursor to the right one character
Ctrl-E	:	Move to beginning of previous field
Ctrl-X	:	Move to beginning of next field
Ctrl-Q	:	Same as *<Esc>*.

Whenever you fill a field completely, PRIME will beep and automatically move the cursor to the next field. If you do not fill the field, you must press *<Enter>* to move on. (Optionally, you can press the down arrow if the next field is highlighted.)

At the end of each input screen, PRIME prompts you with the message: "Revise data on screen? (Y/N): *N*". If you want to change something, just press <*Y*> (or <*y*>); otherwise, press <*Enter*>, <*N*>, or <*n*> and PRIME will continue to the next screen.

If you want to change something on a previous screen, PRIME will give you an opportunity later to edit any data that you input. We provide instructions on how to do this in the sections that follow.

c. Beeps

PRIME uses beeps to signal: (1) that you have reached the end of an input field, (2) that you have made an incorrect entry, or (3) that a processing error has occurred. For the latter case, PRIME will usually display an error message. The most common errors are caused by missing program or data files, or a missing disk. Refer to Section 5.6 for error information.

5.3 PROCESSING PROCEDURES

The remainder of this section consists of a detailed description of how to operate the CONUS modules of the PRIME system. The structure of the section is as follows:

5.3.1 Initial Dialog
5.3.2 Create New CONUS Data Disk
5.3.3 Input/Edit/Run CONUS Mobilization Scenario
5.3.4 Print Output

5.3.1 Initial Dialog

a. Starting the Model

Place the PRIME CONUS program disk in drive *A:* and a blank, formatted disk in drive *B:*. Then type the following after the DOS prompt:

A:\>*prime2*

When the title screen appears, press any key to continue. PRIME will then ask you to choose a data drive.

b. Drive Selection

Following the title screen, you are presented with a drive-selection window.

> *WARNING!! If the scenario is CLASSIFIED, the data files must be stored on a removable disk.*

The program defaults to drive *B:* (usually the floppy disk). If you plan to output data to another drive, press the appropriate letter. Otherwise, press *<Enter>*; PRIME will pause for a second or two while it checks the drive and then it will display the main menu.

c. Main Menu

From the PRIME main menu as shown in Figure 5-1, you can select one of the two CONUS modules. You can also exit and return to DOS.

We present detailed instructions for each menu option in the sections below. Select the desired module by scrolling to it with the up/down arrow keys or by selecting the number key, then press *<Enter>* (see Section 5.2).

5.3.2 Create New CONUS Data Disk

a. What the Module Does

Because you are calculating prime power requirements for a domestic mobilization scenario, you will use the Input/Run Module to enter scenario data and produce scenario output. Before doing that, however, it is essential that you first create one or more data files in which to store the CONUS input and output data. Each data file contains both scenario input and output data. TRADOC output files are named TRADOCn.DBF, and FORSCOM files are named FORSCOMn.DBF (where the n is a number from 1 to 9). These data files will store data on installation loads and populations.

The Create Data Disk Module of PRIME copies empty input/output files with the correct dBase format from the program disk to your data disk. These files already contain data on peacetime loads and populations at existing installations. The module must be run separately for each data disk you want to create.

The module can create up to nine data files on any one disk. In general, you will want a number equal to the number of scenarios plus the number of sensitivity cases.

You may not want to put them all on one disk, however, unless you are using high-capacity disks. Depending on the size of your scenarios, you may want one disk for the regular scenario and another for sensitivity runs, if any.

A standard 360-Kb floppy disk is capable of storing any plausible number of scenario input/output files. Each TRADOC file requires 2,976 bytes of disk space, while each FORSCOM file requires 4,458 bytes.

b. Using the Module

Choose option 1 by pressing *<1>* then *<Enter>*. Choose whether you want to create TRADOC or FORSCOM files and then PRIME will ask you how many input/output files you want.

Type the number of files you want (up to a maximum of nine per disk), press *<Enter>*, and PRIME will display each data file name as it creates it on the data disk.

c. Alternate Method of Creating Data Disks

Data disks can also be prepared directly from DOS. Place the PRIME program disk in drive *A:* and a blank, formatted disk in drive *B:*. Then, to create a TRADOC file, type the following DOS command:

A:\>*copy tradoc.bak b:tradoc1.dbf*

Or, if you want to create a FORSCOM file:

A:\>copy forscom.bak b:forscom1.dbf

If you want to create more than one data file on each disk, retype the above commands, substituting sequential numbers in place of "1" above. You must use the naming conventions shown.

5.3.3 Input/Edit/Run CONUS Mobilization Scenario

a. What the Module Does

This module estimates prime power requirements for TRADOC and FORSCOM installations with mobilization missions. The module combines historical factors for fixed electrical load in peacetime, plus variable power loads per person in wartime, to

calculate total mobilization requirements for each base. Appendix B contains a sample CONUS prime power calculation.

After you select the CONUS module, PRIME displays a title screen, followed by a pick list of the existing files on the data disk.

b. Using the Module

Choose option 2 by pressing <*2*> then <*Enter*>. PRIME will ask you to "Choose an appropriate MACOM:" TRADOC or FORSCOM. Then PRIME will display a menu with a choice between creating a new mobilization scenario or editing an existing scenario. After you make that choice, PRIME will list the scenario input files for the appropriate MACOM. When you select a file, PRIME will display information about the file and ask, "Is this the file you want? (Y/N):". Press <*Enter*> (or <*Y*> or <*y*>) to proceed. Otherwise, press <*N*> or <*n*> to display the file list again.

If the wrong disk is in drive *B:* press <*Esc*> while the file list is on the screen to return to the main menu. Replace the disk in drive *B:* with the correct one and choose option 2 again.

c. Creating a New Scenario

If you choose to create a new scenario input file, PRIME will first display the scenario data entry screen shown in Figure 5-2. Use that screen to enter information identifying the specific scenario. This entry screen contains fields for entering security classification, OPLAN, and other information to identify the scenario. After you enter the classification, the remaining three fields are optional. The optional comment fields can be used to enter information to identify the mobilization scenario. Unlike the OCONUS scenario, in which the scenario can be identified by the composition and location of the units, all the CONUS installation files will look similar (only with different answers) because the CONUS inventory of installations remains the same. Therefore, you will find it helpful to use the comment fields to remember, several months later, which file goes with which scenario and why they

differ. After you have completed all of the entries, PRIME will present its screen-revision message:

"Revise input data? (Y/N):". Press <*Enter*> (or <*N*> or <*n*>) to proceed; press <*Y*> or <*y*> to alter one or more fields on the screen.

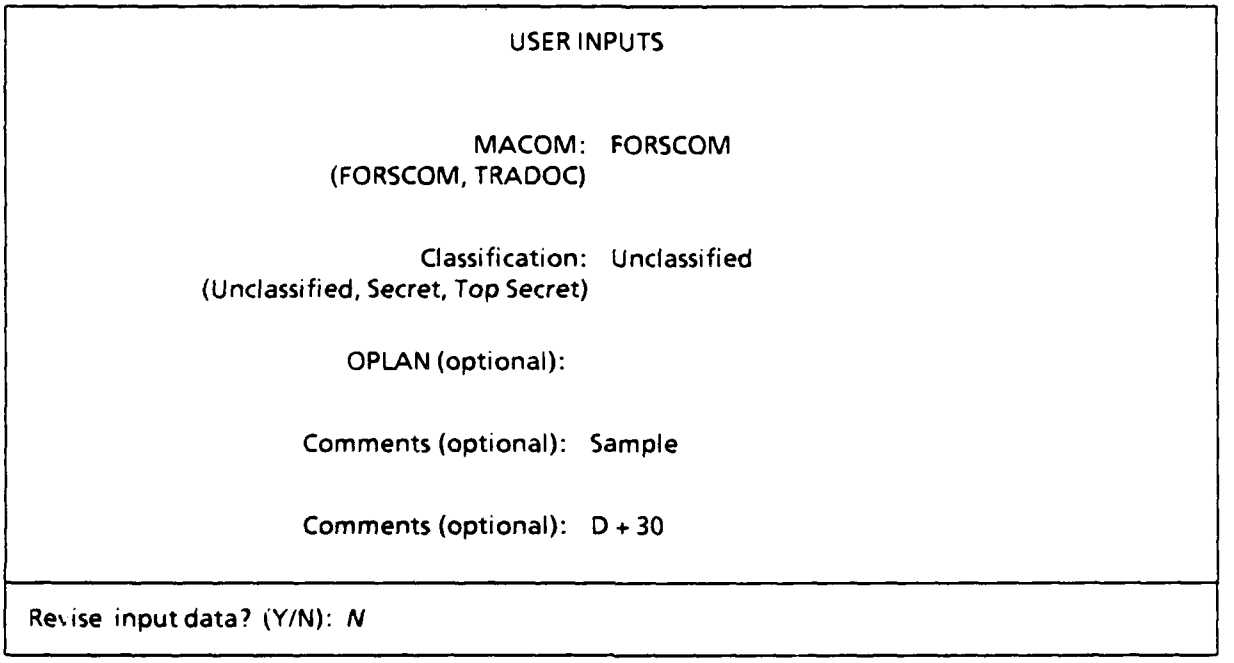


FIG. 5-2. SCENARIO DESCRIPTION

The next screen will be the first installation data entry screen for your MACOM. Proceed to Section 5.3.3.e. for instructions.

d. Editing an Existing Scenario

If you choose to edit an existing scenario file, PRIME will display yet another menu. You can choose: to edit all installations in alphabetical order, to edit a particular installation or installations, to view the summary screens without editing, or to leave the module to return to the main menu.

If you select the first option – edit all installations in order – PRIME will display the screen shown in Figure 5-2, which displays information identifying the specific scenario. If you want to use this entry screen to edit the security classification, OPLAN, and other information, press <*Y*> or <*y*>; otherwise, press

<Enter> (or *<N>* or *<n>*). After you have edited the scenario screen, PRIME will proceed to display the first installation data entry screen for your MACOM. (Proceed to Section 5.3.3.e for instructions.)

If you select the second option – edit a particular installation – PRIME will list all of the installations. Once you have selected an installation, the next screen will be the data entry screen for that installation.

e. Installation Data Entry

Figure 5-3 illustrates the next screen to appear. It is one of a series, one for each installation in the selected MACOM. The information provided at the top of the screen is data from the PRIME database and cannot be altered. Each of the remaining cells displays default data that you can alter as needed.

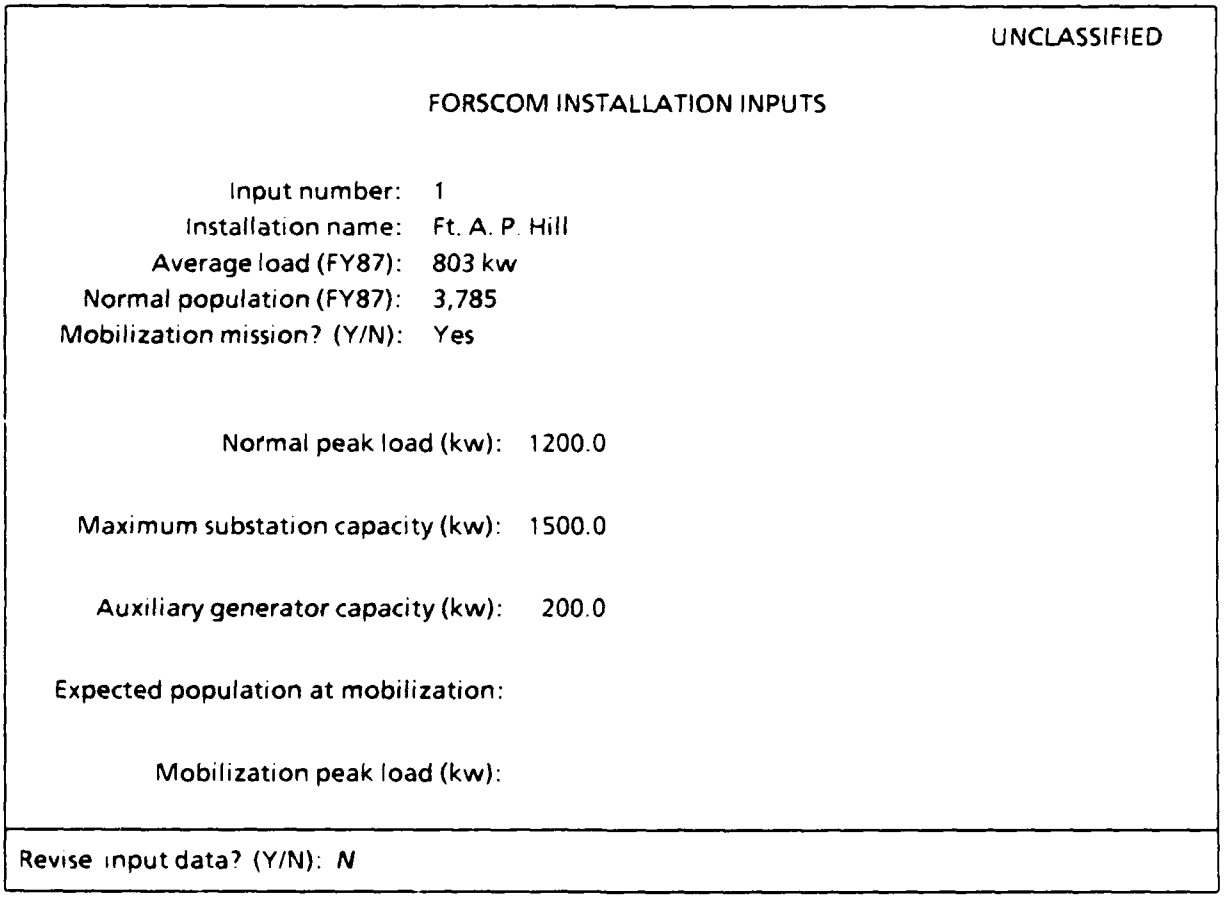


FIG. 5-3. INSTALLATION DATA ENTRY SCREEN

For each cell, either press *<Enter>* to accept the default value, or type in the appropriate value. If one of the installations is not included in your mobilization scenario, enter *<N>* as the answer to the mobilization mission and PRIME will skip down to the end of the screen.

> *NOTE: When you type in a new value, the default entry will remain on the screen until you press <Enter>.*

PRIME estimates the installation's mobilization peak load (kw) and displays it in the last field. Change that value only if you have good reason to do so; your mobilization master plan has an alternate calculation, for example.

Once you have input data for all installations, PRIME displays a listing of mobilization data entries for those installations: mobilization population, backup power capacity, maximum substation capacity, and peak load during mobilization. Because the CONUS methodology is based on statistical approximations that are valid only at an aggregate level, PRIME does *not* display prime power requirements for each individual base. Instead, PRIME estimates prime power requirements for the MACOM as a whole and displays that estimate on the final screen: the load distribution table shown in Figure 5-4. That screen displays both the estimated variation in load sizes and the grand total prime power requirement. The total requirement is the total MACOM power requirement less total substation capacity less total backup capacity. (If you do not want to subtract backup capacity, enter zero for auxiliary generator capacity at each installation.)

5.3.4 Print Output

The model provides solution summaries at the end of the Input/Run Module. Those are displayed on the computer screen, but the output is also sent to a file on your data disk. To print results, you can hold down the *<Shift>* key and press *<Prt Sc>* (the print screen key). That will print out everything you see displayed on the screen.

Even better, access the files through dBase and use dBase commands to print those files. Appendix C explains the dBase file formats used in the TRADOC and FORSCOM data files.

> *WARNING!! The printout is classified to the same level as the source documents. Its classification level should be marked by hand.*

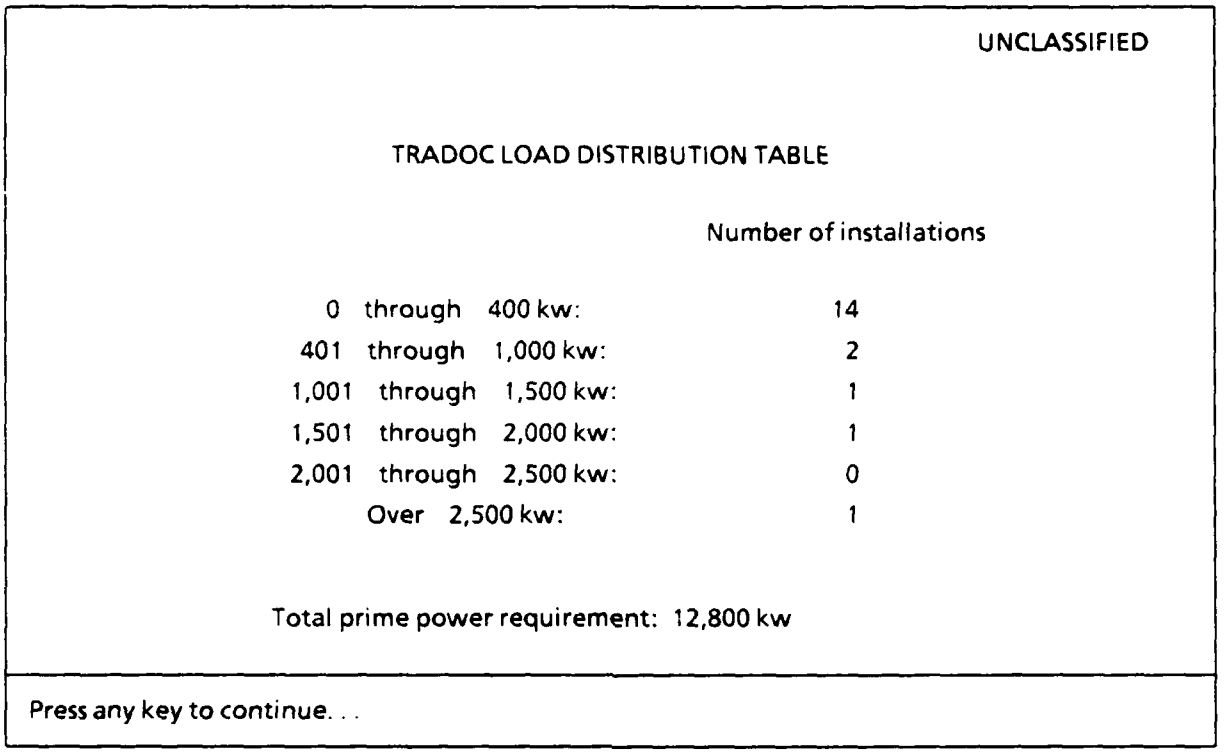


FIG. 5-4. OUTPUT SUMMARY SCREEN

5.4 RELATED PROCESSING

Other than the generation of the supporting databases referred to in earlier sections, there is no off-line processing required by PRIME. Users have no responsibility for database maintenance except for their own scenarios.

5.5 DATA BACKUP

5.5.1 General

In Section 3.1.3, it was recommended that users create backup copies of the model. In addition, once scenarios have been created, the data disks should be backed up. The backup disks should not be destroyed after the scenario is modified in PRIME until the user confirms the accuracy of the newly modified files and until the user confirms that the old scenario has been superseded and will not reappear.

5.5.2 Procedure

Backing up a classified disk precludes the use of a fixed disk on a noncleared machine. This manual will explain the procedure for backing-up a floppy diskette onto another diskette drive: users having unique hardware configurations will have to consult their PC user manuals.

Exit PRIME and return to the DOS prompt *A:\>*.

Place a write-protect tab onto the source disk – the one containing the data to be backed up – to protect against mistakes, then place that disk into the *A:* drive.

Place a blank, formatted, labeled diskette into the *B:* drive. (See Section 3.1.3 for instructions on formatting a disk.) Type the following DOS command:

A>*copy a:*.* b:*

Once the copy operation is complete, the disk in the *B:* drive contains a copy of all the files on the source disk.

WARNING!! If the data are classified, so is the backup diskette. It must be entered into the classified documents register.

5.6 RECOVERY FROM ERRORS AND MALFUNCTIONS

PRIME uses a variety of error handling techniques. In the event of an error or malfunction, PRIME will usually display a message informing the user about the error. PRIME then ceases operations at the current level and returns to a higher level. That is, if PRIME is in one of the modules when an error occurs, it will normally display an error message, then return to the main menu. Following is a description of PRIME's error traps and messages:

a. Program Files Missing

If one or more of the program files or program data files is missing from the program disk, PRIME will display the names of the missing files and pause for the user to press any key, after which it returns to DOS.

If this happens, recopy all of the files from the CONUS master program disk back onto your working copy of the program disk. The instructions for this procedure are in Section 3.1.3.

b. Modules Fail to Operate

Whenever you make a choice from the main menu, PRIME invokes one of its subsidiary programs. PRIME has already checked that the program exists before displaying the menu, so any errors while calling a subsidiary program will usually be more subtle than missing files. These are possible error messages that could be displayed on the screen in the event a module fails:

- *Cannot find file.* Most commonly occurs if you have removed the program disk after the main menu has been displayed. Replace the program disk into the current drive, usually *A:*.
- *Cannot find path.* Is the program disk still in place? Are all of your program files in the same directory as PRIME2.EXE?
- *Too many files are open.* Occasionally, PRIME has two or more files open (for reading and writing data) at the same time. If you get this message, you must reconfigure your CONFIG.SYS file.
- *DOS denied access to file.* Something is wrong with the file. Make a new working copy from the master program disk. See Section 3.1.3.
- *Not enough computer memory (640-Kb required).* Your machine does not have enough RAM. Install more memory or run PRIME on another PC with at least 640-Kb of RAM.
- *Drive x does not exist on your system.* PRIME has already checked to make sure the data drive exists. This error indicates either that you have disconnected one of your drives (possibly inadvertently) or that a hardware malfunction exists.
- *DOS error #x.* In the unlikely event that you see this message, refer to your DOS manual for a description of the error.

c. Input File Contains No Data

If you attempt to edit (or add data to) a file that has no data in it, PRIME will tell you that the file you have selected "contains no scenario data." Recovery is simple; PRIME will redisplay the pick list of input files and ask you to choose another file.

d. Other Errors

If an error occurs that does not cause PRIME to display an error message and exit gracefully from the error, first check whether your system is set up properly (see Section 3.1.3) and that your PC and peripherals are in working order. As a last resort, make a new copy of the PRIME program disk and try again. If you still get an unexplained error, please refer that error to EHSC for diagnosis. EHSC will take steps to prevent a recurrence of that error.

5.7 MESSAGES

See Sections 5.3 and 5.6.

APPENDIX A

ACRONYMS

BGAP	Belvoir Generator Allocation Program
COMMZ	Communications Zone
CONUS	Continental United States
DOS	Disk Operating System
EHSC	Engineering and Housing Support Center
ERDA	Engineering, Research and Development Activity
FCZ	Forward Combat Zone
FORSCOM	Forces Command
Kb	Kilobyte (1,024 bytes)
kVA	Total power
kVAR	Reactive power
kw	Kilowatt (real power)
LEA	Logistics Evaluation Agency
MACOM	Major Commands
MTO&E	Modified Tables of Organization and Equipment
OCONUS	Outside the Continental United States
OPLAN	Operation Plan
PPD	Prime Power Directorate
PRIME	Power Requirements for Installations and Military Encampments Model
PROLOGUE	Planning Resources of Logistics Units Evaluator
RAM	Random Access Memory
RCZ	Rear Combat Zone

SRC	Standard Requirements Code
TO&E	Tables of Organization and Equipment
TPFDL	Time Phased Force Deployment List
TRADOC	Training and Doctrine Command
WWMCCS	Worldwide Military Command/Control System

APPENDIX B

PRIME METHODOLOGY: SAMPLE CALCULATIONS

In this appendix, we illustrate the Power Requirements for Installations and Military Encampment Models (PRIME's) methodology using two sample calculations: one for Outside the Continental United States (OCONUS) and another for CONUS.

SAMPLE OCONUS CALCULATION

We have limited our sample calculation to the calculation of peak load for one base since the methodology is the same no matter how many bases are involved. The first step in running the OCONUS portion of PRIME is to enter data for Army bases that may need electric power, such as the partial sample data shown in the first four columns of Table B-1.

When the user enters the base-specific variables – base name, echelon, location, and movement frequency – PRIME assigns an internal variable (a base number) to each record for that particular base. The base number is shown in Column 1 of Table B-1. (The value of the base number is irrelevant; it represents the order in which PRIME received the base inputs.) PRIME uses the base-specific variables to sort the output records for display; it also uses the base number to distinguish between bases when calculating peak loads for each base.

The next three columns of the table show the unit-specific variables: the unit name, the Standard Requirement Code (SRC), and the number of units of a particular type in that base (unit quantity). The SRC is the link between PRIME's data files.

Once the user has entered base/unit data (via the Input/Edit Module or the Import dBase Module), the next step is to invoke the OCONUS Run Module. That module links the input file (I_nnnnnn.DBF) with a pre-existing data file (LOAD.DAT) containing electric load data for specific Army units. Tables B-2 and B-3 display actual data from that pre-existing data file. In order to link the input file with the data file, PRIME searches for a match between the SRC in the first record of the input file and an SRC in the data file. Table B-2 illustrates the result of that

TABLE B-1

DATA LINK BETWEEN INPUT (.DBF) FILE AND DATA (.DAT) FILE

Base data from I_nnnnnn.DBF				Data from LOAD.DAT			Calculated data	
Base number	Unit name	SRC[a]	Unit quantity	kw	kVAR	Max. kw	Qty. X kw	Qty. X kVAR
1	Bridge Company - Ribbon	*05148J210*	*2*	*10.592*	*0.975*	*3.360*	21 184	1 950
1	FA Btry, 105mm towed	06117H000	1	6 198	0 724	1 453	6 198	0 724
1	Medical Ambulance Company	08127H410	6	7 022	1 005	1 428	42 132	6 030
1	Station Hospital, 300 bed	08233H700	1	148 899	1 180	45 119	148 899	1 800
1	MP Escort Guard Company	19047H400	5	3 622	0 000	1 500	18 110	0 000
1	MP Guard Co	19247H400	3	9 223	0 000	4 800	27 669	0 000
1	Heavy M aint Co , Maint Bn	29089J000	2	78 255	26 318	21 554	156 510	52 636
1	General Supply Co , Gen Spt	29118H100	1	61 558	17 947	12 397	61 558	17 947
1	Rep Parts Supply Co , GS Corps	29119H510	4	102 386	18 773	12 770	409 544	75 092
1	Ammo storage	F 42183AA	5	0 350	0 000	0 000	1 750	0 000
1	Chapel	F 74018AN	1	3 200	0 000	0 000	3 200	0 000
1	Post Office	F 74059AF	1	17 640	0 000	0 000	17 640	0 000
1	Medical depot	F GH4019	2	69 600	0 000	0 000	139 200	0 000
			Total				1,053 594	155 559
			Maximum			45 119		

[a] SRC is the link between I_nnnnnn DBF and LOAD DAT; it is in both

search. PRIME finds a match at record number 58 and reads the following unit variables from LOAD.DAT: the peak power in kilowatts (kw), the reactive power (kVAR), and the highest single load (Max kw). Those variables and their values are shown in Columns 5 through 7 of Table B-1.

TABLE B-2

SEGMENT OF DATA FROM LOAD.DAT DATA FILE INCLUDING FIRST SRC MATCH

Record number	SRC	kw	kVAR	Max kw
55	05146J200	32.811	2.292	7.214
56	05146L000	19.075	2.596	3.524
57	05147J200	12.795	2.904	2.030
58	*05148J210*	*10.592*	*0.975*	*3.360*
59	05153L000	10.732	1.507	3.548
60	05156J800	9.836	1.222	0.805
61	05157H700	6.858	1.504	1.416

Table B-3 illustrates the remaining records that PRIME must find in LOAD.DAT to match with the SRCs in the input file. PRIME then reads the unit load variables associated with those records; their values are also shown in Columns 5 through 8 of Table B-1.

As shown in Table B-1, PRIME multiplies the peak power kw and reactive power (kVAR) variables by the unit quantity for each unit. PRIME then sums the total kw and total kVAR for the base as a whole. The maximum load is the highest single load, in this case 45.119 kw.

TABLE B-3

REMAINDER OF SRC MATCHES FROM LOAD.DAT DATA FILE

Record number	SRC	kw	kVAR	Max kw
101	06117H000	6.198	0.724	1.453
187	08127H410	7.022	1.005	1.428
194	08233H700	148.899	1.180	45.119
346	19047H400	3.622	0.000	1.500
352	19247H400	9.223	0.000	4.800
380	29089J000	78.255	26.318	21.554
391	29118H100	61.558	17.947	12.397
392	29119H510	102.386	18.773	12.770
571	F.42183AA	0.350	0.000	0.000
581	F.74018AN	3.200	0.000	0.000
583	F.74059AF	17.640	0.000	0.000
601	F.GH4019	69.600	0.000	0.000

Finally, PRIME calculates the following variables for the base as a whole and displays the ones shown in italics:

- Theta = Arctan [(total kVAR)/(total kw)] = Arctan (155.559/1053.594) = 0.147 radians
- *System power factor* = Cos (Theta) = Cos (0.147) = *0.989*
- Max item = largest single draw = Max (0.000 . . 45.119) = 45.119
- *Surge percent* = (Max item)/(total kw) = 45.119/1053.594 = *4.2percent.*

SAMPLE CONUS CALCULATION

We have limited our sample CONUS calculation to the calculation of peak mobilization load for one installation since the methodology is the same no matter how many installations there are.

PRIME reads data on normal peacetime installation electric loads and populations from the pre-existing data files FORSCOM.BAK or TRADOC.BAK. Our

sample installation has a normal population of 22,737 and an average load of 17,126 kw.

The user is asked to enter three peacetime variables – normal peak load, maximum substation capacity, and available auxiliary generator capacity – and one mobilization variable – expected population at mobilization. We shall assume that those variables have the following values:

- Normal peak load = 22,250 kw
- Maximum substation capacity = 35,000 kw
- Auxiliary generator capacity = 500 kw
- Expected mobilization population = 250,000.

From that data, PRIME estimates the total electric load at mobilization as follows:

Mobilization peak load = peacetime fixed factor + wartime variable factor × mobilization population = 2,809 + 0.10 × 250,000 = 27,809 kw.[1]

Because of the limited precision of the fixed and variable factors, PRIME rounds that value to the nearest 100, in this case 27,800 kw. Using that value, PRIME estimates the required prime power capacity as follows:

Prime Power requirement = mobilization peak load – max substation capacity – auxiliary power = 27,800 – 35,000 – 500 = 0.0[2]

Rather than displaying the calculated prime power requirement for each individual installation, PRIME adds up the prime power requirement for the entire MACOM. Unlike the OCONUS model, the CONUS results are statistically reliable only for the MACOM as a whole.

---

[1]If (mobilization population < normal population) or (mobilization peak load < normal peak load), then mobilization peak load = normal peak load.

[2]If (max substation capacity + auxiliary generator capacity) > mobilization peak load, then prime power requirement = 0.0.

APPENDIX C

INPUT/OUTPUT DATA FILE FORMATS

In this appendix, we explain the formats and codes used in Power Requirements for Installations and Military Encampments Model (PRIME's) input and output files. PRIME creates three types of data files: two for each scenario Outside the Continental United States (OCONUS) and one type for both Forces Command (FORSCOM) and Training and Doctrine Command (TRADOC) within the CONUS.

OCONUS DATA FILES

For each OCONUS scenario, PRIME creates both an input file and an output file. Both files must have an identical file name, with the exception of the first character. Only the third through eighth characters are optional. For example, if the input file is named *I__123456.DBF*, the output file must be named *O__123456.DBF*.

Table C-1 shows the dBase format of PRIME's OCONUS input files. Three of the fields contain coded data, which can be deciphered as follows:

- ECHELON
  - 1# = Theater
  - 2# = Army
  - 3# = Corps
  - 4# = Division
- LOCATION
  - 1 = Communications Zone (COMMZ)
  - 2 = Rear Combat Zone (RCZ)
  - 3 = Forward Combat Zone (FCZ)

TABLE C-1

OCONUS INPUT FILE FORMAT (dBASE)

Field	Field name	Type	Width	Dec[a]	Content
1	BASE_NUM	Numeric	4	-	Program variable
2	BASE_NAME	Character	28	-	Base name
3	ECHELON	Numeric	1	-	Refer to codes in text
4	LOCATION	Numeric	1	-	Refer to codes in text
5	MOV_FREQ	Numeric	2	-	Refer to codes in text
6	HOST_NTN	Logical	1	-	Host-nation support
7	UNIT_NAME	Character	28	-	Unit name
8	SRC	Character	9	-	Standard requirement code
9	UNIT_QTY	Numeric	3	-	Number of units in base
Total			78[b]		

[a] Number of decimal places

[b] Total includes hidden deletion field

- MOV_FREQ (movement frequency)
  - 7 = Unit expected to move every 7 days or less
  - 14 = Unit expected to move every 8 – 20 days
  - 21 = Unit expected to move every 21 days or more.

The first three records of each input file contain scenario-specific header data, rather than base and unit data. The data in those first three records must be interpreted as follows:

- Record #1
  - BASE_NAME = Major Command (MACOM)
  - UNIT_NAME = Operation Plan (OPLAN)
- Record #2
  - BASE_NAME = First comment
  - UNIT_NAME = Host-nation support (yes or no)

- Record #3
  - BASE_NAME = Second comment
  - UNIT_NAME = Security classification.

Table C-2 shows the dBase format of the OCONUS output files. The file includes 15 fields of electric load data by frequency, for 50 Hertz (Hz), 60 Hz, 400 Hz, direct current (DC), and total load. The total load is greater than the sum of its parts because of frequency conversion inefficiencies.

TABLE C-2

OCONUS OUTPUT FILE FORMAT (dBASE)

Field	Field name	Type	Width	Dec	Content
1	BASE_NUM	Numeric	4	-	Program variable
2	BASE_NAME	Character	28	-	Base name
3	ECHELON	Numeric	1	-	Refer to codes in text
4	LOCATION	Numeric	1	-	Refer to codes in text
5	MOV_FREQ	Numeric	2	-	Refer to codes in text
6	NUM_UNITS	Numeric	3	-	Total units in base
7	POPULATION	Numeric	7	-	Base population
8	H50_KW	Numeric	11	3	Peak load - 50 Hz
9	H60_KW	Numeric	11	3	Peak load - 60 Hz
10	H400_KW	Numeric	11	3	Peak load - 400 Hz
11	DC_KW	Numeric	11	3	Peak load - DC
12	TOT_KW	Numeric	11	3	Peak load - Total
13	H50_PF	Numeric	5	3	Power factor - 50 Hz
14	H60_PF	Numeric	5	3	Power factor - 60 Hz
15	H400_PF	Numeric	5	3	Power factor - 400 Hz
16	DC_PF	Numeric	5	3	Power factor - DC
17	TOT_PF	Numeric	5	3	Power factor - Total
18	H50_MAXKW	Numeric	7	3	Largest single load - 50 Hz
19	H60_MAXKW	Numeric	7	3	Largest single load - 60 Hz
20	H400_MAXKW	Numeric	7	3	Largest single load - 400 Hz
21	DC_MAXKW	Numeric	7	3	Largest single load - DC
22	TOT_MAXKW	Numeric	7	3	Largest single load - Total
23	HOST_NTN	Logical	1	-	Host-nation support
Total			163		

The first four records of each output file contain scenario-specific header data, rather than base and unit data. The data in those first four records must be interpreted as follows:

- Record #1

  BASE_NAME = MACOM

- Record #2
  - BASE_NAME = OPLAN
  - NUM_UNITS = Security classification
    - 0 = Unclassified
    - 1 = Secret
    - 2 = Top secret
- Record #3

  BASE_NAME = First comment

- Record #4

  BASE_NAME = Second comment.

CONUS DATA FILES

For each CONUS scenario, PRIME creates either a FORSCOM or a TRADOC file, depending on which MACOM you have chosen. Both files are combination input/output file.

Table C-3 shows the dBase format of those CONUS input/output files. Unlike the OCONUS data files, none of the fields contain coded data.

TABLE C-3

CONUS DATA FILE FORMATS

Field	Field name	Type	Width	Dec	Field name
1	FORT_ID	Numeric	3		Program variable
2	FORT_NAME	Character	30		Installation name
3	AVG_LOAD	Numeric	10	1	Peacetime average load
4	PEAK_LOAD	Numeric	10	1	Peacetime peak load
5	MOB_LOAD	Numeric	10	1	Mobilization peak load
6	MAX_LOAD	Numeric	10	1	Substation capacity
7	BACK_LOAD	Numeric	10	1	Backup capacity
8	PP_REQT	Numeric	10	1	Prime power requirements
9	NORM_POP	Numeric	10		Peacetime population
10	MOB_POP	Numeric	10		Mobilization population
Total			114		

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION / AVAILABILITY OF REPORT "A" Approved for public release; distribution unlimited.
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) LMI-AR805R2	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION Logistics Management Institute 6b. OFFICE SYMBOL *(If applicable)*	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS *(City, State, and ZIP Code)* 6400 Goldsboro Road Bethesda, Maryland 20817-5886	7b. ADDRESS *(City, State, and ZIP Code)*
8a. NAME OF FUNDING / SPONSORING ORGANIZATION Engineering and Housing Support Center 8b. OFFICE SYMBOL *(if applicable)*	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER MDA903-85-C-0139
8c. ADDRESS *(City, State, and ZIP Code)* ATTN: CEHSC-MP, Casey Building Ft. Belvoir, VA 22060-5580	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO / TASK NO / WORK UNIT ACCESSION NO

11. TITLE *(Include Security Classification)*
PRIME – Power Requirements for Installations and Military Encampments, Version 2.1 End-User Manual

12. PERSONAL AUTHOR(S)
R. W. Salthouse, D. M. Brown, J. Hawkins

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT *(Year, Month, Day)*	15. PAGE COUNT
Final	FROM _____ TO _____	October 1989	92

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS *(Continue on reverse if necessary and identify by block number)*
FIELD	GROUP	SUB-GROUP	Electricity, Prime Power, Generators, Mobilization, Tactical Generators

19. ABSTRACT *(Continue on reverse if necessary and identify by block number)*

The Army uses prime power – large, mobile generators – in its rear areas to bridge the gap between commercial power and tactical generators. When supplying concentrations of Army units, prime power is less vulnerable than commercial power yet demands less fuel and maintenance than tactical generators.

The Engineering and Housing Support Center (EHSC) procures, operates, and maintains the Army's prime power requirements. PRIME – Power Requirements for Installations and Military Encampments – is the model which EHSC uses to calculate prime power requirements for selected Army units and facilities in specific wartime scenarios.

To calculate the Army's total prime power requirement, EHSC is sending PRIME to all major commands since they are best able to enter the necessary wartime scenario data. With PRIME, the commands can enter data either manually, by choosing from a computer-generated list of Army units, or automatically, by downloading selected data from the Worldwide Military Command/Control System via an intermediate dBase-format file.

This end-user manual is intended primarily for computer operators and Army planners who need to calculate unit and facility power requirements. Since the manual also describes the PRIME model's methodologies, it should be useful to those who want to know what the model does and how it works.

20. DISTRIBUTION / AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION	
☐ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS		
22a. NAME OF RESPONSIBLE INDIVIDUAL	22b. TELEPHONE *(Include Area Code)*	22c. OFFICE SYMBOL

DD FORM 1473, 84 MAR — 83 APR edition may be used until exhausted. All other editions are obsolete

SECURITY CLASSIFICATION OF THIS PAGE
UNCLASSIFIED